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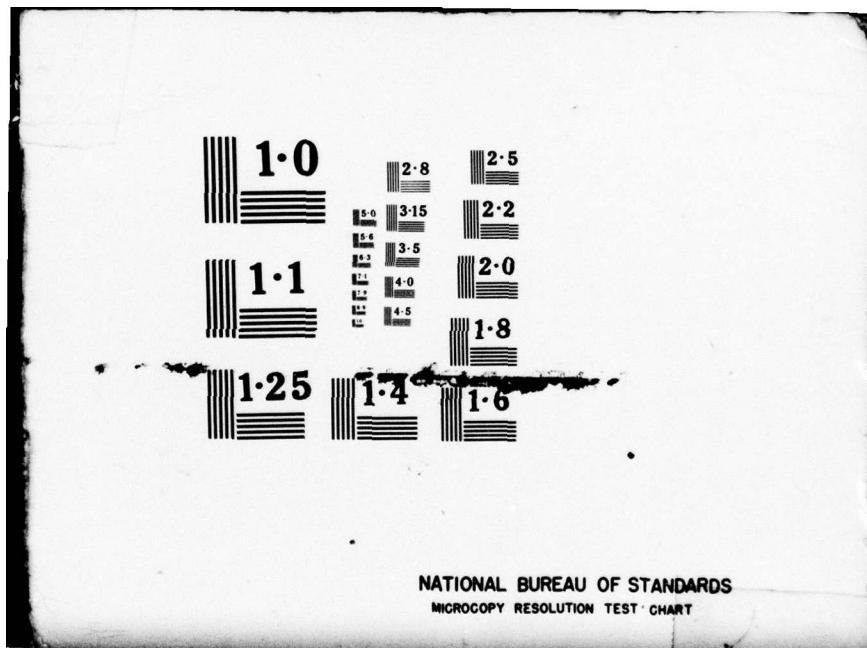
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ANALYSIS OF DATA FROM RESEARCH SATELLITES

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July 1978

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INTRODUCTION

This document contains a description of the work done by Emmanuel College under contract no. F19628-73-C-0190 in support of AFGL experiments which were flown on satellites S72-1, S3-2, and S3-3. Specific documentation of the trapped radiation environment for selected time intervals between October 1972 and January 1976 is included in graphical and tabular form. A mathematical model of the trapped radiation proton environment based on the S72-1 data is also presented.

Satellite S72-1.

The experiment flown on S72-1 consisted of a "Heavy Particle Identification Instrument" constructed by Panametrics Inc. For a description of this instrument see References (1) and (2). We have previously reported directional and omnidirectional proton flux summaries for this experiment (reference 3). The S72-1 orbit was nearly polar and approximately circular at an altitude of 760 km. This gave good to excellent coverage of the region of "L-Hmin" space including $1.14 < L < 4.0$ earth radii and $100 < H_{min} < 760$ km.

The data from S72-1 covered the time period of October 1972 through December 1973. No obvious temporal variations were observed over this period. A subset consisting of all observations for the time interval October 1972 - February 1973 was selected as being a representative sample for analysis. This data base was sorted into an L - Hmin grid and an empirical fit was made to it using multiple linear regression techniques. The resulting mathematical model showed agreement with the original grid with an RMS error of less than

ten percent. A listing of the model in the form of a FORTRAN coded function subprogram is given in Appendix - A.

A FORTRAN program was written to duplicate as closely as possible the orbital integration map which Levine and Vette use to illustrate their "AP6" proton model for a similar range of energies (reference 4). AP6 is a composite of eleven experimental data sets from various satellite experiments from 1961 - 1964 and is widely referenced as the proton radiation standard. The results from our model are tabulated in Tables 1 and 2 and the comparable results from Levine and Vette are given in Table 3 and 4.

Comparison of the tables shows qualitative agreement but with differences of up to an order of magnitude at the lower energies. Vette suggests that factors of two uncertainties exist in the calibration of some of the experiments in his composite, and that temporal variations of a factor of two could exist. However, the Vette model is effectively a fit to a much larger portion of L-Hmin space and is heavily weighted with data taken at Hmins above 1000 km. Our data suggests that AP6 does not represent the proton environment below 1000 km. very well. We have submitted a copy of our S72-1 data to Dr. Vette to be included in future updates of AP6.

Further documentation of our proton model is given in Figures 1, 2, and 3. Figures 1 and 2 are a three-dimensional map of the modeled fluxes vs L and Hmin viewed from the low-L side and the high-L side respectively. Figure 3 is a set of plots showing the energy spectrum as a function of L and Hmin.

TABLE I

ORBITA - INTEGRATION MAP FOR COMPARISON TO VETTE A26. ALT = 556. KM

ORBIT ENERGY MEV	ALTITUDE.. KM	TOTAL TIME.. 24 HOURS				ORBITAL FLUX 90 DEG			
		0 DEG	30 DEG	JE1-JE2	JE1	JE1-JE2	JE1	JE1-JE2	JE1-JE2
4.0	5.0	.515E+05	.353E+03	.90E+07	.115E+06	.858E+07	.143E+07	.643E+07	.979E+06
5.0	5.0	.511E+05	.353E+03	.793E+07	.963E+05	.715E+07	.741E+06	.545E+07	.512E+06
6.0	7.0	.508E+05	.353E+03	.783E+07	.852E+05	.641E+07	.644E+06	.494E+07	.310E+06
7.0	8.0	.504E+05	.353E+03	.775E+07	.778E+05	.596E+07	.234E+06	.463E+07	.208E+06
8.0	9.0	.501E+05	.353E+03	.757E+07	.725E+05	.567E+07	.210E+05	.442E+07	.150E+06
9.0	10.0	.497E+05	.353E+03	.760E+07	.688E+05	.546E+07	.159E+06	.427E+07	.114E+06
10.0	11.0	.494E+05	.353E+03	.753E+07	.658E+05	.530E+07	.126E+06	.416E+07	.914E+05
11.0	12.0	.490E+05	.353E+03	.746E+07	.635E+05	.518E+07	.103E+06	.406E+07	.757E+05
12.0	13.0	.487E+05	.353E+03	.740E+07	.617E+05	.507E+07	.872E+05	.399E+07	.645E+05
13.0	14.0	.483E+05	.353E+03	.734E+07	.601E+05	.498E+07	.756E+05	.392E+07	.564E+05
14.0	15.0	.480E+05	.353E+03	.729E+07	.589E+05	.491E+07	.558E+05	.387E+07	.502E+05
15.0	15.0	.476E+05	.353E+03	.722E+07	.578E+05	.484E+07	.511E+05	.382E+07	.454E+05
15.0	17.0	.473E+05	.353E+03	.716E+07	.574E+05	.479E+07	.565E+05	.377E+07	.430E+05
17.0	19.0	.469E+05	.353E+03	.710E+07	.570E+05	.473E+07	.536E+05	.373E+07	.409E+05
19.0	19.0	.466E+05	.353E+03	.705E+07	.565E+05	.467E+07	.511E+05	.369E+07	.392E+05
19.0	21.0	.462E+05	.353E+03	.599E+07	.563E+05	.462E+07	.430E+05	.365E+07	.377E+05
20.0	21.0	.459E+05	.353E+03	.693E+07	.560E+05	.457E+07	.472E+05	.361E+07	.364E+05
21.0	22.0	.455E+05	.353E+03	.688E+07	.557E+05	.452E+07	.456E+05	.358E+07	.353E+05
22.0	23.0	.451E+05	.353E+03	.682E+07	.555E+05	.448E+07	.443E+05	.354E+07	.343E+05
23.0	24.0	.448E+05	.353E+03	.577E+07	.552E+05	.444E+07	.430E+05	.351E+07	.335E+05
24.0	25.0	.444E+05	.353E+03	.571E+07	.550E+05	.439E+07	.420E+05	.347E+07	.327E+05
25.0	26.0	.441E+05	.353E+03	.666E+07	.548E+05	.435E+07	.410E+05	.344E+07	.320E+05
26.0	27.0	.437E+05	.353E+03	.660E+07	.546E+05	.431E+07	.401E+05	.341E+07	.314E+05
27.0	28.0	.434E+05	.353E+03	.552E+07	.544E+05	.427E+07	.393E+05	.338E+07	.308E+05
28.0	29.0	.430E+05	.353E+03	.643E+07	.543E+05	.423E+07	.386E+05	.335E+07	.303E+05
29.0	30.0	.427E+05	.353E+03	.644E+07	.541E+05	.419E+07	.390E+05	.331E+07	.298E+05
30.0	0.0	.423E+05	.423E+05	.639E+07	.638E+07	.415E+07	.415E+07	.329E+07	.329E+07

TABLE 2

ORBITA - INTEGRATION MAP FOR COMPARISON TO VETTE AP6. ALT = 833. KM

ORBIT ALTITUDE...	833. KM	TOTAL TIME: 24 HOURS	ORBITAL FLUX					
			ORBITAL FLUX			ORBITAL FLUX		
ENERGY	0 DEG	30 DEG	60 DEG	90 DEG	JE1	JE1-JE2	JE1	JE1-JE2
E1	32	JE1	JE1-JE2	JE1	JE1-JE2	JE1	JE1-JE2	JE1
4.0	5.0	• 986E+07	• 675E+05	• 775E+06	• 247E+07	• 591E+08	• 100E+06	• 457E+08
5.0	5.0	• 979E+07	• 675E+05	• 752E+08	• 163E+07	• 491E+08	• 498E+07	• 387E+08
5.0	7.0	• 972E+07	• 675E+05	• 735E+03	• 128E+07	• 442E+08	• 230E+07	• 352E+08
7.0	8.0	• 966E+07	• 675E+05	• 722E+03	• 105E+07	• 414E+08	• 180E+07	• 332E+08
8.0	9.0	• 959E+07	• 675E+05	• 711E+03	• 896E+06	• 396E+08	• 127E+07	• 319E+08
9.0	10.0	• 952E+07	• 675E+05	• 703E+08	• 793E+06	• 384E+08	• 950E+06	• 310E+08
10.0	11.0	• 945E+07	• 675E+05	• 695E+08	• 725E+06	• 374E+08	• 752E+06	• 303E+08
11.0	12.0	• 939E+07	• 675E+05	• 697E+08	• 674E+06	• 367E+08	• 520E+05	• 297E+08
12.0	13.0	• 932E+07	• 675E+05	• 681E+08	• 635E+06	• 360E+08	• 529E+06	• 292E+08
13.0	14.0	• 925E+07	• 675E+05	• 674E+08	• 605E+06	• 355E+08	• 454E+06	• 288E+08
14.0	15.0	• 918E+07	• 675E+05	• 663E+08	• 582E+06	• 350E+06	• 416E+06	• 285E+06
15.0	16.0	• 912E+07	• 675E+05	• 662E+08	• 563E+06	• 346E+08	• 380E+06	• 281E+08
16.0	17.0	• 905E+07	• 675E+05	• 657E+08	• 554E+06	• 342E+08	• 362E+06	• 278E+06
17.0	18.0	• 898E+07	• 675E+05	• 651E+08	• 547E+06	• 339E+08	• 347E+06	• 276E+06
18.0	19.0	• 891E+07	• 675E+05	• 643E+08	• 540E+06	• 335E+08	• 334E+06	• 273E+06
19.0	20.0	• 885E+07	• 675E+05	• 643E+08	• 535E+06	• 332E+08	• 324E+06	• 273E+06
20.0	21.0	• 878E+07	• 675E+05	• 635E+08	• 529E+06	• 329E+08	• 314E+06	• 278E+06
21.0	22.0	• 871E+07	• 675E+05	• 630E+08	• 525E+06	• 326E+08	• 306E+06	• 265E+06
22.0	23.0	• 864E+07	• 675E+05	• 624E+08	• 520E+06	• 323E+08	• 299E+05	• 263E+06
23.0	24.0	• 858E+07	• 675E+05	• 619E+08	• 517E+06	• 320E+08	• 293E+06	• 260E+06
24.0	25.0	• 851E+07	• 675E+05	• 614E+08	• 513E+06	• 317E+08	• 297E+06	• 258E+06
25.0	26.0	• 844E+07	• 675E+05	• 609E+08	• 510E+06	• 314E+08	• 292E+06	• 256E+06
26.0	27.0	• 837E+07	• 675E+05	• 604E+08	• 507E+06	• 311E+08	• 278E+06	• 253E+06
27.0	28.0	• 831E+07	• 675E+05	• 593E+08	• 504E+06	• 308E+08	• 274E+06	• 251E+06
28.0	29.0	• 824E+07	• 675E+05	• 594E+08	• 502E+06	• 305E+08	• 270E+06	• 249E+06
29.0	30.0	• 817E+07	• 675E+05	• 589E+08	• 499E+06	• 303E+08	• 267E+06	• 247E+06
30.0	0.0	• 810E+07	• 610E+07	• 584E+08	• 584E+08	• 300E+08	• 244E+08	• 244E+08

TABLE 3
ORBITAL INTEGRATION MAP AP6

CRBIT ALTITUDE...	300. N MI	556 KM	ORBITAL FLUX	0 CEC	TOTAL TIME.. 24. HOURS				TIME INTERVAL.. 1. MINUTES				
					E1	E2	*E1 - E2	*E1	E1	E2	*E1 - E2	*E1	
4.00	5.00	0.457E 04	0.191E 08	0.250E 07	0.228E	C8	0.625E	C7	C.170E	08	0.449E	07	
5.00	6.00	0.434E 05	0.178E 04	0.166E 08	0.176E	C7	0.155E	08	0.346E	07	0.126E	08	
6.00	7.00	0.416E 05	0.144E 04	0.145E	04	C.144E	04	0.132E	07	0.111E	C8	0.159E	07
7.00	8.00	0.402E 05	0.121E 04	0.135E	08	0.104E	C7	0.109E	08	0.147E	07	0.845E	07
8.00	9.00	0.390E 05	0.114E 04	0.125E	C8	0.842E	06	0.544E	C7	0.107E	C7	0.735E	07
9.00	10.00	0.379E 05	0.904E 03	0.117E	09	0.659E	06	0.837E	07	0.807E	06	0.656E	07
10.00	11.00	0.370E 05	0.755E 02	0.111E	C8	0.592E	06	0.755E	C7	0.623E	C6	0.595E	07
11.00	12.00	0.362E 05	0.714E 03	0.104E	08	0.505E	06	0.693E	07	0.511E	06	0.546E	07
12.00	13.00	0.355E 05	0.645E 02	0.585E	C7	0.442F	06	0.642E	C7	0.422E	C6	0.5C7E	07
13.00	14.00	0.349E 05	0.586E 03	0.941E	07	0.391E	06	0.600E	07	0.355E	06	0.475E	07
14.00	15.00	0.343E 05	0.537E 02	0.502E	C7	0.347E	06	0.564E	C7	0.3C3E	C6	0.447E	07
15.00	16.00	0.337E 05	0.495E 03	0.867E	07	0.312E	06	0.534E	07	0.263E	06	0.424E	07
16.00	17.00	0.332E 05	0.456E 02	0.836E	C7	0.281E	06	0.508E	07	0.233E	06	0.4C4E	07
17.00	18.00	0.328E 05	0.426E 03	0.808E	07	0.256E	06	0.485E	07	0.203E	06	0.386E	07
18.00	19.00	0.324E 05	0.395E 02	0.782E	C7	0.234E	06	0.464E	07	0.181E	C6	0.370E	07
19.00	20.00	0.320E 05	0.373E 03	0.759E	07	0.215E	06	0.446E	07	0.163E	06	0.356E	07
20.00	21.00	0.316E 05	0.346E 02	0.738E	C7	0.198E	06	0.420E	07	0.142E	C7	0.343E	07
21.00	22.00	0.312E 05	0.330E 03	0.710E	07	0.1A3E	06	0.415E	07	0.134E	06	0.332E	07
22.00	23.00	0.309E 05	0.312E 02	0.699E	C7	0.170E	06	0.402E	C7	0.122E	C6	0.321E	07
23.00	24.00	0.306E 05	0.296E 03	0.682E	07	0.159E	06	0.390E	07	0.112E	06	0.311E	07
24.00	25.00	0.303E 05	0.281E 02	0.667E	C7	0.148E	06	0.378E	C7	0.104E	C6	0.3C3E	07
25.00	26.00	0.300E 05	0.268E 03	0.652E	07	0.139E	06	0.368E	07	0.958E	05	0.294E	07
26.00	27.00	0.298E 05	0.255E 02	0.638E	C7	0.112E	06	0.358E	C7	0.890E	C5	0.287E	07
27.00	28.00	0.295E 05	0.244E 03	0.625E	07	0.123E	06	0.349E	07	0.830E	05	0.280E	07
28.00	29.00	0.293E 05	0.234E 02	0.612E	07	0.117E	06	0.341E	C7	0.776E	C5	0.273E	07
29.00	30.00	0.290E 05	0.224E 03	0.601E	07	0.110E	06	0.333E	07	0.727E	05	0.267E	07
30.00		0.288E 05	0.217E 02	0.590E	07	0.122E	C7	0.326E	C7	0.261E	07	0.261E	07

TABLE 4
ORBITAL INTEGRATION MAP AP6

CRBIT ALTITUDE..	ENERGY MEV	CRBIT FLUX 0 CEC	TOTAL TIME..	24. HOURS	ORBITAL FLUX 60 DEG	TIME INTERVAL.. 1. MINUTES	
						*E1	E1-E2
4.00	5.00	3.249E C8	C.235F 07	0.116E 09	0.204F 08	0.51PF C8	0.696F 0A
5.00	6.00	0.222E 08	0.178E 07	0.950E 08	0.137F 08	C.671E 0A	0.236F 0A
5.00	7.00	0.208E C8	C.139E 07	C.824E C9	0.932E 07	0.526E C8	0.136E 0A
7.00	8.00	0.194E 08	C.113E 07	0.726E 3A	0.744E C7	C.674E C7	0.424E 0A
9.00	9.00	0.183E C8	C.541F 0F	C.651F C8	C.585F 07	0.448E 08	0.658E 07
5.00	10.00	0.173E C8	C.800E 06	C.593E 08	C.473E 07	0.257E C8	0.345E 07
11.00	11.00	0.165E C8	C.651F 06	C.545E C8	0.391E 07	0.344F 08	0.267E 07
11.00	12.00	0.153E 09	0.606E 08	0.506E OR	0.320E C7	C.281E 0A	0.222E 07
12.00	13.00	0.152E C8	C.536E 06	C.473F C8	0.282E 07	0.255E C8	0.184E C7
13.00	14.00	0.147E C8	0.479E 06	0.445E 08	0.245E 07	0.240F 08	0.184E C7
14.00	15.00	0.142E C8	C.432E 06	C.421F C8	0.214E 07	0.225F C8	0.133E C7
15.00	16.00	0.138E C8	0.392E 06	0.399E 08	0.190E 07	0.212E 08	0.115F 07
16.00	17.00	0.134E C9	C.35EF 06	C.38CE C9	0.169E 07	0.201E 08	0.122E 07
17.00	18.00	0.130E 08	C.329E 06	C.363E 08	0.152E C7	0.190F 08	0.895E 06
18.00	19.00	0.127E C6	C.32CF 06	C.34EE C9	0.137E 07	0.181E C8	0.755E C6
19.00	20.00	0.124E C9	C.281E 06	0.234F 0A	0.125F 07	0.173F 0A	0.150E C8
20.00	21.00	0.121E C8	C.241F 06	C.322E C8	0.114E 07	0.166E C8	0.137E 08
21.00	22.00	0.119E 08	0.244E 06	0.211E 0A	0.104F 07	0.159E 0A	0.526E 06
22.00	23.00	0.116E C8	C.228E 06	C.3CCE C8	0.951E 06	0.152E C8	0.589E 06
23.00	24.00	0.114E 08	0.214F 05	0.291F 09	0.988F 06	0.148E C8	0.157E 08
24.00	25.00	0.112E C8	C.2C1E 06	C.282E C8	0.824E 06	0.147E C8	0.157E 08
25.00	26.00	0.110E 09	0.190E 06	0.273E 0P	0.757F 0A	0.139E 08	0.132E 08
26.00	27.00	0.108E C8	C.183E 06	0.265E C8	0.715E 06	0.134E C8	0.127E 08
27.00	28.00	0.106E 09	0.170F 06	0.259E JA	0.67CF C6	C.131E 0A	0.109E 08
28.00	29.00	0.104E C8	C.162E 06	C.252E C8	0.628E 06	0.127E C8	0.257E 06
29.00	30.00	0.103E 08	0.154E 06	0.246E 08	0.591F 06	0.123E 08	0.278E 06
30.00	30.00	0.101E C8	C.1C1E 06	C.24CE C8	0.240F 0A	0.120E C8	0.260E 08

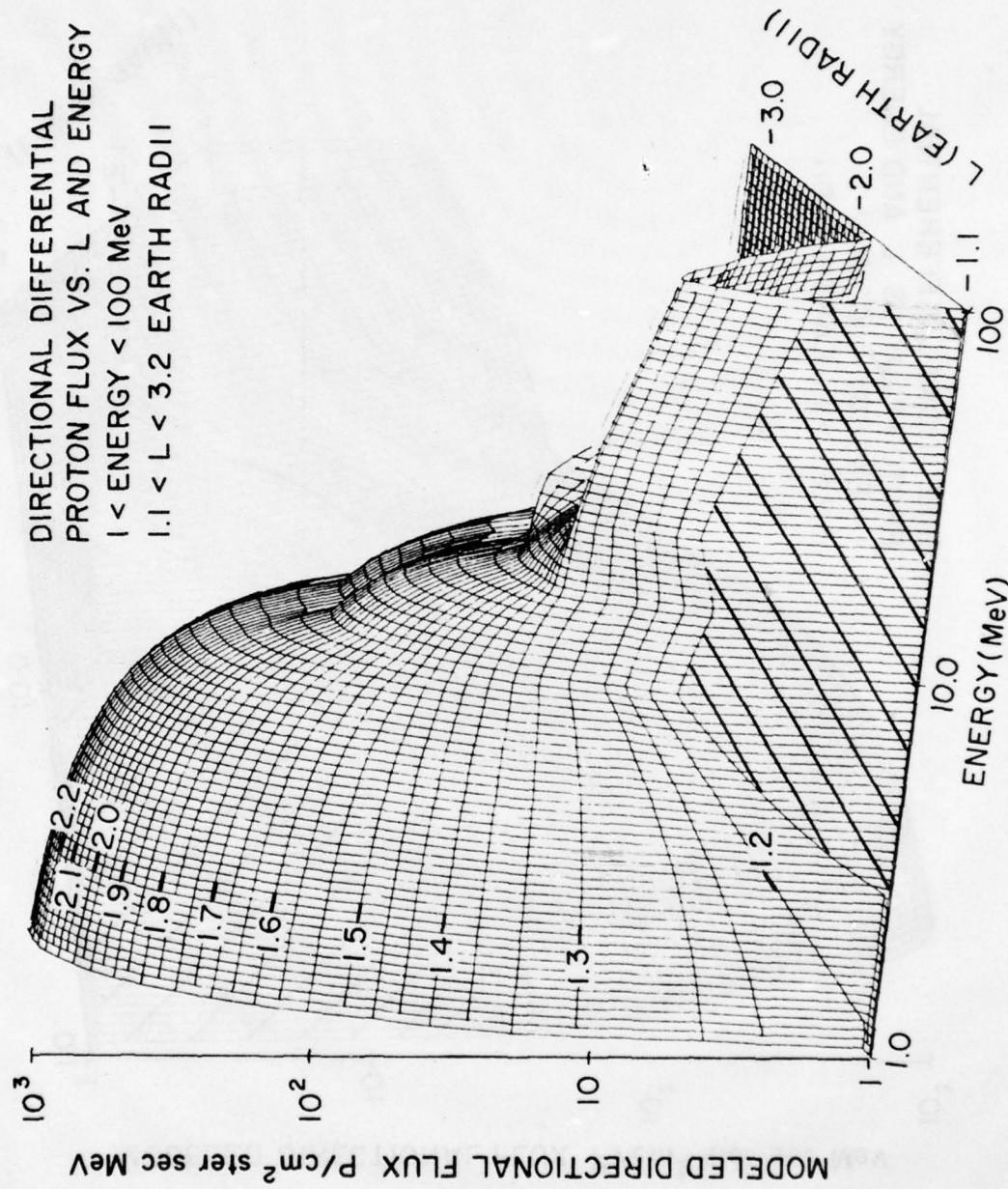


FIG. 1

DIRECTIONAL DIFFERENTIAL
PROTON FLUX VS. L AND ENERGY
| < ENERGY < 100 MeV
3.2 > L > 1.1 EARTH RADII

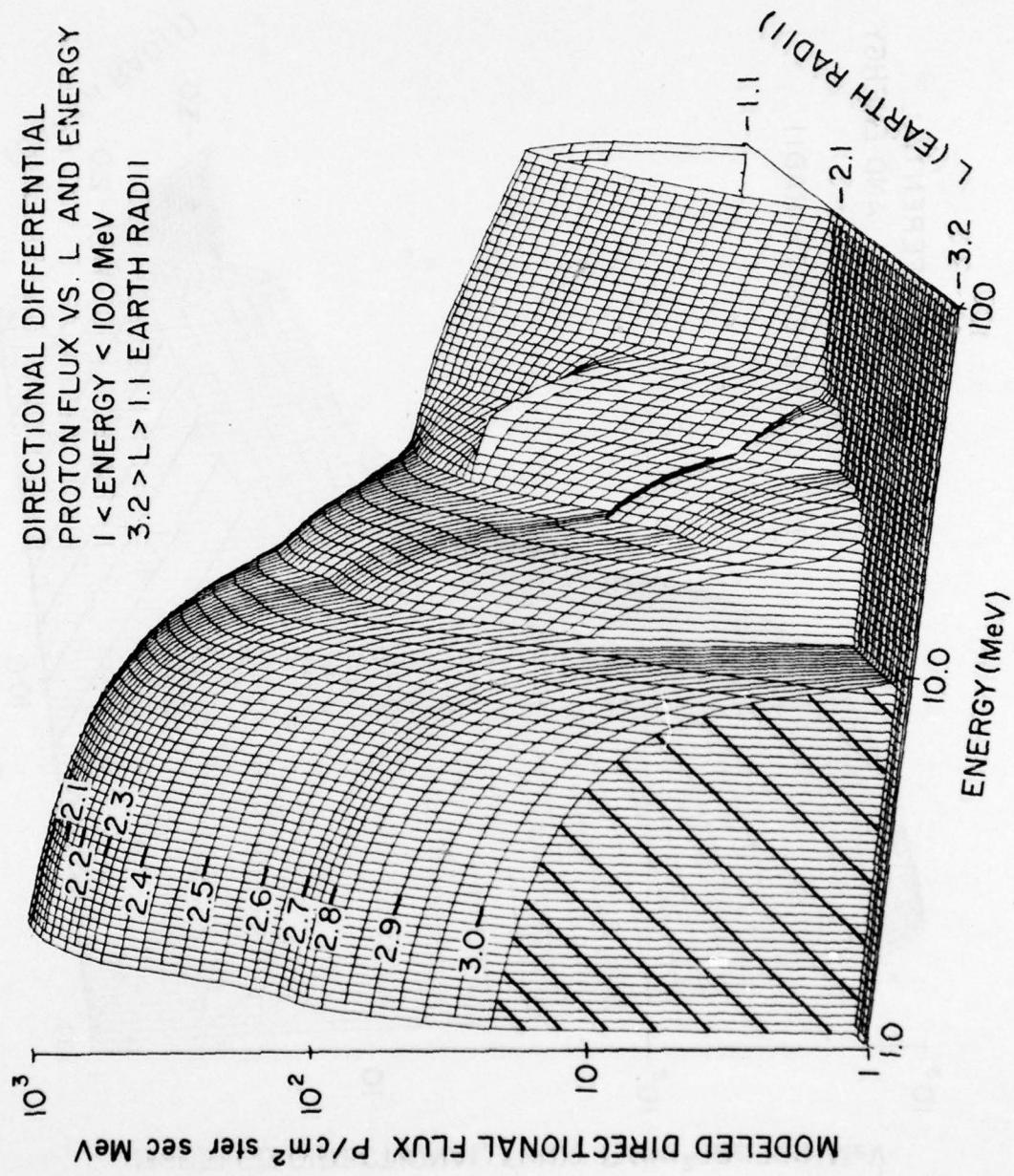


FIG. 2

DIRECTIONAL FLUX
09/05/74 17:59:11

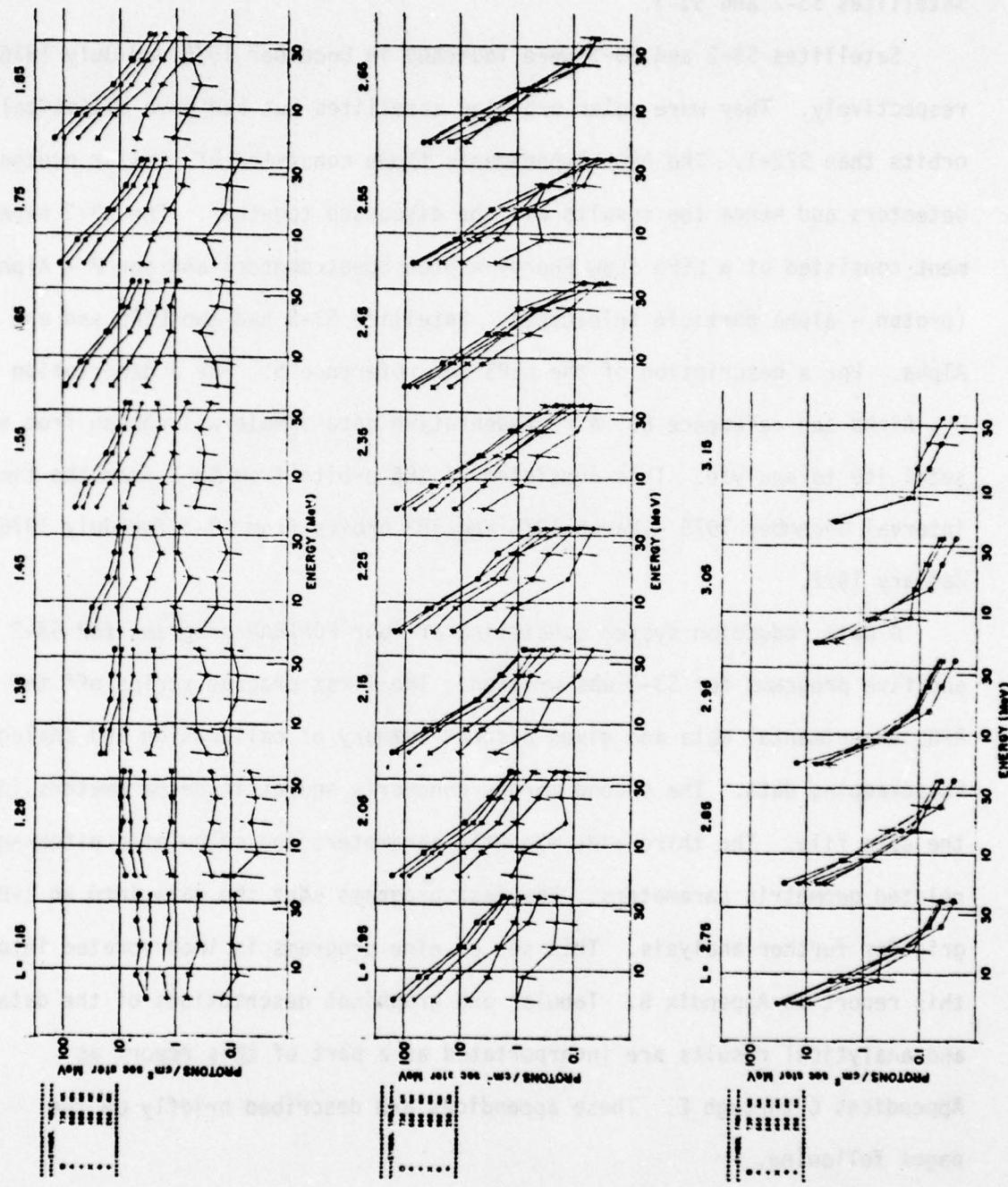


FIG. 3

Satellites S3-2 and S3-3.

Satellites S3-2 and S3-3 were launched in December 1975 and July 1976 respectively. They were polar-orbiting satellites but had more elliptical orbits than S72-1. The AFGL experiments flown consisted of similar proton detectors and hence the results will be discussed together. The S3-2 experiment consisted of a LEPS (Low Energy Proton Spectrometer) and one P - Alpha (proton - alpha particle telescope). Satellite S3-3 had two LEPS and one P - Alpha. For a description of the LEPS see reference 5. For a description of P - Alpha see reference 6. A representative data sample was chosen from each satellite to analyze. This consisted of 186 orbits from S3-2 from the time interval December 1975 - March 1976 and 383 orbits from S3-3 for July 1976 - January 1977.

A data reduction system consisting of four FORTRAN programs for S3-2 and five programs for S3-3 was written. The first program strips off the AFGL experimental data and gives a short summary of calibration and analog housekeeping data. The second merges ephemeris and attitude parameters into the data file. The third adds magnetic parameters and calculates pitch-angle related geometric parameters. The last programs sort the data into an L-Hmin grid for further analysis. This set of nine programs is incorporated into this report as Appendix B. Tabular and graphical descriptions of the data and analytical results are incorporated as a part of this report as Appendices C through E. These appendices are described briefly on the pages following.

Appendix C.

This appendix gives two extended tables presenting the results of the P-Alpha experiment for each of the two satellites. The format was chosen to be compatible with our previously published tables summarizing satellite S72-1 (reference 3). Each page in the table summarizes all the sampled data from a small interval in L. Down the page, this L interval is divided into several Hmin intervals. For each L-Hmin combination, average values for the set of observations are given for Hmin, B, and the corresponding equatorial pitch angle EQPA. The ratio of the average B value to the equatorial B value corresponding to that L-Hmin is given as B/BEQ.

There are 14 columns across the page. The first column represents the central value of pitch angle corresponding to that line of data. The line labeled "7" is the sum of two 15-degree pitch angle intervals 0 - 15 and 165 - 180 degrees. It can be interpreted as a background, and the calculated directional and omnidirectional fluxes should be of good quality as long as the background is small relative to them. The line labeled "90" is the calculated directional proton flux and is based on the pitch angle interval 75 - 105 degrees. The line labeled "0" is the calculated omnidirectional proton flux and is based on a sum over all pitch angles. Columns 2 through 11 are the 5 proton fluxes with their respective RMS error corresponding to the 5 energy intervals given in the header line above them. Column 12 is the observation time in seconds. Columns 13 and 14 are the integral proton flux observed by the instrument and its RMS error.

Appendix D.

This appendix contains a representative sample selected from the energy distributions observed by the S3-2 and S3-3 LEPS and P-Alpha instruments. The sample was taken at $L = 3.5$ to 4.0 where background from high energy protons and electrons is at a minimum. The average B , L , H_{min} and B/BEQ values corresponding to the data sample represented by each plot is given at the top. One curve is drawn for each H_{min} group and plotted with a unique symbol. Table 5 below gives the symbol correspondence with the H_{min} parameter. It also gives the mirror point B value corresponding to each $L-H_{min}$ group so that comparisons with data sets from other experimentors based on a $B - L$ coordinate system can be made. The agreement between the three instruments over the energy interval 500 Kev to 6 Mev also serves as an in flight verification of the instrument calibration.

Appendix E.

This appendix contains a set of plots of the observed time history of the two LEPS and the P-Alpha instrument from S3-3 for selected L intervals. Day one in the plots was January 1, 1976. A K_p curve is included with each plot to show the corresponding solar related activity for the same time interval. Attempts to correlate the fluctuations in the low H_{min} fluxes with the K_p index and other similar geophysical parameters have not yet been successful. The constancy of the higher H_{min} fluxes is partially due to a saturation condition at high count rates in the solid state detectors. See Table 5 for the symbol correspondence with the H_{min} coordinate.

TABLE 5
SYMBOL TABLE

Values of B in Gauss at Edges of Intervals

Hmm	L =	2.0	2.2	2.4	2.6	2.8	3.0	3.5	4.0	5.0
0	1	.276	.283	.291	.301	.311	.323	.352	.381	.442
100	2	.268	.275	.282	.292	.302	.313	.340	.368	.425
200	3	.260	.266	.274	.283	.293	.303	.329	.355	.408
300	4	.251	.258	.266	.274	.284	.293	.318	.342	.391
400	5	.243	.250	.257	.266	.274	.283	.306	.329	.375
500	6	.235	.242	.249	.257	.265	.274	.295	.316	.358
600	*	.227	.233	.240	.248	.256	.264	.284	.303	.341
700	X	.218	.225	.232	.239	.247	.254	.272	.290	.324
800	Y	.210	.217	.224	.230	.237	.244	.261	.277	.307
900	Z	.202	.209	.215	.222	.228	.234	.250	.264	.290
1000	X	.194	.200	.207	.213	.219	.225	.238	.251	.274
1500	4	.170	.177	.184	.190	.196	.202	.214	.224	.237
2000	O	.142	.148	.154	.160	.165	.169	.180	.189	.199
3000	X	.099	.104	.109	.113	.117	.121	.129	.136	.143
4000	+	.071	.075	.079	.083	.086	.089	.096	.102	.108
6000	A	.038	.041	.046	.048	.050	.055	.059	.062	O

REFERENCES

1. Morel, P.R., and B. Sellers, "Design and Fabrication of a Heavy Particle Identification Instrument for Satellites", R & D Equipment Information Report, Panametrics Inc., Contract F19628-69-C-0234, December 1972.
2. Filz, R.C., et al, "Observations of S-45 MeV Protons at L < 3 and L ≥ 7", Space Research XIV, 321, Berlin 1974.
3. Holeman, E., and R. Filz, "Proton Flux Data Obtained on Air Force Satellite 72-1", Scientific Report No. 1, Emmanuel College, AFCRL-TR-74-0325, June 1974.
4. Lavine, James P., and James I. Vette, "Models of the Trapped Radiation Environment, Vol. 5: Inner Belt Protons", NASA SP-3024, 1969.
5. Pantazis, John, A. Huber, and M.P. Hagan, "Design of a Low Energy Proton Spectrometer", Final Report, Emmanuel College, AFCRL-TR-75-0637, Dec. 1975.
6. Morel, Paul R., et al. "A Satellite Telescope for Protons and Alphas", Final Report, Panametrics, Inc., AFCRL-TR-74-0531, Nov. 1974.

APPENDIX A

```

FUNCTION FLXBC(HH,EL,EE) 10
C***** 11
C 1975 SUBPROGRAM. E. HOLEMAN. LAST ALTERED 21 APR 75. 12
C CREATED 14 MAR 75. 13
C**** 14
C DSK CALCULATOR PROTON FLUX MODEL - 01-D 15
C**** 16
C FUNCTIONAL FORM. 17
C LOG(J)=A1+A2*LOG(H)+A3*LOG(E/15.) 18
C**** 19
C DEFINITION OF COEFFICIENTS A1,A2, AND A3. 20
C 21
C FOR L LESS THAN 1.4 22
C A1 = -25.77+16.44*L-4.282*L*L 23
C A2 = 5.359-.4055*L*L 24
C A3 = .995*L-.8651*L*L 25
C 26
C FOR (L.GE.1.4.AND.E.GT.15.) 27
C A1 = -15.06+2.120*L+.4368*L*L 28
C A2 = 5.359-.4055*L*L 29
C A3 = 3.462-2.674*L 30
C 31
C FOR (L.GE.1.4.AND.E.LE.15.) 32
C A1 = -15.93+3.139*L+.1566*L*L 33
C A2 = 5.359-.4055*L*L 34
C A3 = 8.208-8.172*L+1.325*L* 35
C**** 36
C**** 37
C FOR (E.GT.170) 38
C J = J(E=170)*(170/E)**4.2 39
C**** 40
C***** 41
C DIMENSION A(3),B(3),C(3),D(3),E(3),F(3),G(3),H(3),P(3) 42
C**** 43
C MODEL 01-D COEFFICIENTS. 44
C**** 45
C DATA A,B,C,D,E,F,G,H,P /-25.77,-15.06,-15.93,16.44,2.120, 46
C +3.139, 47
C +-4.282,.4368,.1566,3*5.359,3*-.4055,0.,3.462,8.208, 48
C +.995,-2.674,-8.172,-.8651,0.,1.325,3*0./ 49
C FB1(X,K)=A(K)+B(K)*X+C(K)*X*X 50
C FB2(X,K)=D(K)+E(K)*X*X 51
C FB3(X,K)=F(K)+G(K)*X+H(K)*X*X 52
C FJJ(Y,Z)=10.**(A1+A2*ALOG10(Y)+A3*ALOG10(Z/15.)) 53
C**** 54
C SELECT KK 55
C**** 56
C**** 57
C**** 58
C**** 59

```

```
KK=1          60
IF(EL.GT.1.4) KK=2          61
IF(EL.GT.1.4.AND.EE.LT.15.) KK=3          62
A1=FB1(EL,KK)          63
A2=FB2(EL,KK)          64
A3=FB3(EL,KK)          65
IF(A3.GT.0.) A3=0.          66
XE=EE          67
IF(FE.GT.170.) FE=170.          68
C*****          69
C   CAULATE FUNCTION VALUE.          70
C*****          71
FLXBC=FJJ(4H,XE)          72
IF(FE.GT.170.) FLXBC=FLXBC/(FE/170.)**4.2          73
RETURN          74
END          75
```

CECEICE //// END OF LIST ////
CECEICE //// END OF LIST ////

APPENDIX B

78 23 11 16 023

APPENDIX - B

S3-2 and S3-3 Data Reduction System

Table of Contents

	<u>PAGE NO. (REF. UPPER)</u> (RIGHT CORNER)
1. Program S2RDBB	1
Subroutine S2UPA	
Subroutine S2RPK	
Subroutine TDATB	
Subroutine JULED	
Subroutine S2PAL	
Subroutine S2OUTA	
2. Program S2OMAD	20
Subroutine OM	
Subroutine ORBT	
Subroutine DFS2	
Subroutine NWTN	
Subroutine DATJ	
Subroutine TJDA	
Subroutine FIT	
Subroutine LAMDEL	
Subroutine ORMAG	
Subroutine LAGDEG	
Subroutine LAGRAG	
Subroutine S2UPB	
Subroutine S2PK2	
Subroutine GEOGA	
3. Program S2BLAF	54
Subroutine EULER	
Subroutine TRANS	
Subroutine INVAR	
Subroutine LCALL	
Subroutine INTR3	
Subroutine POSTL	
Subroutine LINES	
Subroutine START	
Subroutine INTEG	
Subroutine CARMEL	
Subroutine NEWMAG	
Subroutine INTER	
Subroutine COEFG	
Subroutine S2UP2	

4. Program S2SABI	82
Subroutine AUTCD	
5. Program S3RABA	91
Subroutine S3UPA	
Function ISHIFT	
6. Program S3OMAB	100
Subroutine OM3	
Subroutine AUTDC	
7. Program S3BLAC	120
8. Program S3SACD	125
Subroutine HMALT	
Subroutine PACE3	
9. Program S3SADE	136
Subroutine UNPE3	
Subroutine UNPEF	
Subroutine PACEF	

PROGRAM S2RD3B(AFILE,BFILE,CFILE,ZFILE,OUTPUT=64,TAPE1	10
+AFILE,TAPE2=BFILE,TAPE6=OUTPUT,TAPE8=CFILE,TAPE9=ZFILE)	11
*****	12
*****	13
C 1975 PROGRAM. E. HOLEMAN. LAST ALTERED 2 MAR 76	14
C 1975 S3-2 DATA REDUCTION SYSTEM. CREATED 13 NOV 75	15
C VERSION NO. FT3.	16
*****	17
*****	18
C COUNTERS USED	19
C ICT1 COUNTS RECORDS READ	20
C ICT2 COUNTS RECORDS WRITTEN	21
C ICT3 COUNTS SECONDS OF DATA PROCESSED	22
C NSSC SUB-SUB-COM COUNTER	23
*****	24
C FLAGS USED	25
C IFGA.GE.2 => LEPS CALIBRATION MODE IN EFFECT	26
*****	27
*****	28
C REFORMAT MERN DATA TAPE AND CREATE 1ST PUM SUMMARY FILE	29
*****	30
C 47200 CH STORAGE REQUIRED FOR LOADING.	31
*****	32
*****	33
*****	34
DIMENSION FHED(30),IHED(30),TDAT(37,17),JDAT(65),	35
+IANN(100),JANN(4,16),KDAT(27,16),KANN(27),LDAT(4,8),	36
+ISAN(100),ISDA(44),JSDA(4,8),LTIM(8),LABL(3),	37
+XOUT(12),JSAN(4,8)	38
EQUIVALENCE(FHED,IHED)	39
EQUIVALENCE(IANN(37),JANN(1,1))	40
EQUIVALENCE(ISDA(14),JSDA(1,1))	41
EQUIVALENCE(ISAN(37),JSAN(1,1))	42
DATA IANN,KANN /101*400B,27*0/	43
DATA ISAN,ISDA /144*0/	44
MASKA=SHFT(18,45)	45
MASKB=7777777777777773	46
MASKC=777777B	47
NPRT=4	48
JPRTR=0	49
REWIND1	50
REWIND2	51
REWIND8	52
REWIND9	53
*****	54
C INITIATE FILES AND ZERO CONSTANTS	55
*****	56
100 CONTINUE	57
DO 140 IT=1,16	58
KDAT(1,IT)=MASKD	59
140 CONTINUE	60

IEOF=0	61
JWC=27	62
ISKP=0	63
ICT1=0	64
ICT2=0	65
ICT3=0	66
NSSC=0	67
IFRT=2	68
IUNT=9	69
IFGP=0	70
KANN(27)=1044KP RECORD	71
ADAT=DATE(IDTT)	72
ATIM=TIME(ITIM)	73
2001 FORMAT(141,5X,*S73-2 PROCESSING BEGUN TN S2R03B*,	74
+2(2X,A10)/5X,*ORBIT ID = *,3A10	75
+5X,*DATA ACQUISITION INTERVAL =*,2F10.5,2X,A8	76
+5X,*ALTITUDE RANGE =*,3F10.1	77
+5X,*LATITUDE RANGE =*,3F10.3	78
+5X,*ACTIVITY INDEX =*,3F10.3)	79
***	80
2 READ FILE HEADER	81
***	82
READ(1) KNC,KGC,(FHED(K),K=1,KWC)	83
IF(EOF(1)) 100,10	84
10 CONTINUE	85
ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)	86
4001 FORMAT(R4,R5,2X,A10,1X,A8)	87
HR1=FHED(8)/3600.	88
HP2=FHED(13)/3600.	89
WRITE(6,2001) ITIM, IDTT, LABL, HR1, HP2, IHED(6), FHED(9),	90
+FHED(14), FHED(10), FHED(11), FHED(15), FHED(12),	91
+(FHED(I),I=23,25)	92
WRITF(8,2001) ITIM, IDTT, LABL, HR1, HP2, IHED(6), FHED(9),	93
+FHED(14), FHED(10), FHED(11), FHED(15), FHED(12),	94
+(FHED(I),I=23,25)	95
WRITE(9,2001) ITIM, IDTT, LABL, HR1, HP2, IHED(6), FHED(9),	96
+FHED(14), FHED(10), FHED(11), FHED(15), FHED(12),	97
+(FHED(I),I=23,25)	98
GMT1=FLOAT(IHED(18))/1000.	99
TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.	100
LTIM(1)=1975	101
LTIM(2)=IHED(16)	102
IF(LTIM(2).LT.330) LTIM(1)=1976	103
GMTZ=GMT1-FLOAT(IHED(17))/TRAT	104
***	105
2 READ ONE DATA RECORD	106
***	107
20 CONTINUE	108
IT=0	109
READ(1) IWC, IGC, ((TOAT(T,J), I=1,IWC), J=1,IGC)	110
IEOF=EOF(1)	111

```

      IF(IEOF.NE.0) GO TO 210          112
      ICT1=ICT1+1                      113 -
C*****+
C   LTST SELECTED IPRT RECORDS      114
C*****+
      IF(TDT1.E.ISKP.DR.TCT1.GT.(ISKP+IPRT)) GO TO 40 115
      JPRT=1                          116 -
      40    CONTINUE                   117
C*****+
C   PPROCESS DATA IN ONE SECOND INTERVALS 118
C*****+
      70    CONTINUE                   119
      II=II+1                         120
      NSSC=MOD(NSSC,16)+1             121
C*****+
C   UNPACK DATA                     122
C*****+
      CALL S2UPAK(JDAT(1,II),JDAT,TANN,JANN,NSSC) 123
      IF(NSSC.NE.1.AND.ICT3.EQ.0) GO TO 52 124
      IF(ICT3.NE.0) GO TO 50            125
      HR=(GMTZ+FLDAT(JDAT(1,1))*TRAT)/3600.        126
      CALL TDATB(LTTM,TMB,MON,HR,JD,013)           127
      IHED(26)=JD
      FHED(27)=HR
      IHED(30)=SL3FILE
      WRITE(2) KWD,KGD,(FHED(I),I=1,KWD)           128
      60    CONTINUE                   129
      CALL S2PAL(JDAT(14),LDAT,LCHN)           130
      IF(IFGB.GT.5) IFGB=0
      IFGA=SHIFT(JDAT(2),-15)
      IF(IFGB.NE.0) IFGB=IFGB+1
      IF(IFGB.EQ.0.AND.IFGA.EQ.1) IFGB=1
      ICT3=ICT3+1
      2008 FORMAT(//5X,T11,12I5,I2,I7,2I5/5X,B12/5X,B12/5X,10I9/
      +5X,25I4)                           131
C*****+
C   REPACK DATA AND CREATE BFILE       132
C*****+
      CALL S2RPK(JDAT,TANN,KDAT(1,NSSC),KANN,NSSC) 133
      JDAT(2)=JDAT(2).AN1.77777B           134
C*****+
C   ADD DATA TO SUMMARY FILE.         135
C*****+
      DO 73 JJ=1,12                      136
      IF(IFGB.NE.5) JSDA(JJ)=JSDA(JJ)+JDAT(JJ+1)+MASKA
      IF(JJ.GT.4) GO TO 70               137
      JSDA(JJ,LCHN)=JSDA(JJ,LCHN)+LDAT(JJ,LCHN)+MASKA
      70    CONTINUE                   138
      IF(IFGB.EQ.1) CALL S2OUTA(JSDA,JSDA,TSAN,
      +JSAN,IUNT,ICT3,0)                 139
      IF(IFGB.EQ.5) CALL S2OUTA(JSDA,JSDA,TSAN,JSAN,IUNT,TCT3,1) 140

```

IF(NSSC.NE.16) GO TO 50	163
ISA=0	164
ISB=0	165
ISC=0	166
DO 110 JJ=1,6	167
ISA=ISA+IANN(JJ)	168
110 CONTINUE	169
DO 120 JJ=7,16	170
ISB=ISB+IANN(JJ)	171
120 CONTINUE	172
DO 130 JJ=17,36	173
ISC=ISC+IANN(JJ)	174
130 CONTINUE	175
IF((ISA.LT.300.AND.ISB.LT.1150).AND.ISC.LT.2000) GO TO 50	176
210 CONTINUE	177
IF(NSSC.EQ.0) GO TO 200	178
*****	179
C DO 16 SECOND INTERVAL ROUTINES	180
*****	181
JPRT=0	182
ICT2=ICT2+1	183
JGC=NSSC+1	184
WRITE(2) JGC,JGC,((KDAT(I,J),I=1,27),J=1,NSSC),	185
+ (KANN(I),I=1,27)	186
DO 150 JJ=1,16	187
KDAT(1,JJ)=MASKA	188
150 CONTINUE	189
IF((ISA.LT.300.AND.ISB.LT.1150) GO TO 50	190
DO 80 JJ=1,100	191
IF(IANN(JJ).GE.400?) GO TO 80	192
ISAN(JJ)=ISAN(JJ)+IANN(JJ)+MASKA	193
80 CONTINUE	194
IF(MOD(ICK2,NPRT).NE.0.AND.IEOF.EQ.1) GO TO 50	195
IF(IFGA.NE.1) CALL S2OUTA(ISDA,JSOA,ISAN,JSAN,IUNT,	196
+ ICT3,0)	197
F0 CONTINUE	198
IF(IEOF.NE.0) GO TO 200	199
IF(IF.LT.IG) GO TO 30	200
GO TO 20	201
100 CONTINUE	202
WRITE(8,2005)	203
200F FORMAT(5X,*EOF ENCOUNTERED ON AFILE*)	204
STOP	205
200 CONTINUE	206
IUNT=8	207
CALL S2OUTA(ISDA,JSOA,ISAN,JSAN,IUNT,ICT3,?)	208
WRITE(6,2007) ICT1	209
WRITE(8,2007) ICT1	210
WRITE(8,2007) ICT1	211
2007 FORMAT(5X,*EOF ENCOUNTERED ON AFILE BY S2R03B*	212
+* AFTER RECORD NUMBER*,16)	213

```
ENDFILE2  
IF(IEOF.NE.0) GO TO 90  
CALL DISCON(8)  
END
```

214
215
216
217

APP-B- 1 - 5

```

SUBROUTINE S2UPA(TDAT,JDAT,IANN,JANN,NSSC)          218
C*****                                                 219
C 1975      SUBPROGRAM. E. HOLEMAN. LAST ALTERED 1 DEC 75 220
C 1975      S3-2 DATA REDUCTION SYSTEM. CREATED 14 NOV 75 221
C*****                                                 222
C*****                                                 223
C UNPACK AFILE FORMATTED DATA FROM MCINERNIE.        224
C*****                                                 225
C*****                                                 226
C*****                                                 227
DIMENSION IDAT(37),JDAT(65),IANN(36),JANN(40),JANN(4,16) 228
JDAT(1)=IDAT(1)                                         229
C*****                                                 230
C DECODE 24-2-11                                         231
C*****                                                 232
IF(NSSC.GT.16) NSSC=1                                     233
JDAT(2)=MXGETX(IDAT(2),1,4)                            234
JDAT(3)=MXGETX(IDAT(2),5,4)                            235
JDAT(4)=SHIFT(MXGETX(IDAT(2),9,2),1?) .OR. MXGETX(IDAT(3),1,2) 236
JDAT(5)=MXGETX(IDAT(3),3,4)                            237
JDAT(6)=MXGETX(IDAT(3),7,4)                            238
JDAT(7)=MXGETX(IDAT(4),1,4)                            239
JDAT(8)=MXGETX(IDAT(4),5,4)                            240
JDAT(9)=SHIFT(MXGETX(IDAT(4),9,2),1?) .OR. MXGETX(IDAT(5),1,2) 241
JDAT(10)=MXGETX(IDAT(5),3,4)                           242
JDAT(11)=MXGETX(IDAT(5),7,4)                           243
JDAT(12)=MXGETX(IDAT(6),1,4)                           244
JDAT(13)=MXGETX(IDAT(6),5,4)                           245
C*****                                                 246
C DECODE P-ALPHA DATA                                    247
C*****                                                 248
JDAT(14)=SHIFT(MXGETX(IDAT(7),7,4),35) .OR. MXGETX(IDAT(8),1,5) 249
C*****                                                 250
C DECODE 24-5-21                                         251
C*****                                                 252
JDAT(15)=SHIFT(MXGETX(IDAT(8),7,4),24) .OR. MXGETX(IDAT(9),1,4) 253
JDAT(16)=SHIFT(MXGETX(IDAT(9),5,6),12) .OR. MXGETX(IDAT(10),1,2) 254
JDAT(17)=MXGETX(IDAT(10),3,8)                           255
JDAT(18)=MXGETX(IDAT(11),1,8)                           256
JDAT(19)=SHIFT(MXGETX(IDAT(11),9,2),36) .OR. MXGETX(IDAT(12),1,6) 257
JDAT(20)=SHIFT(MXGETX(IDAT(12),7,4),24) .OR. MXGETX(IDAT(13),1,4) 258
JDAT(21)=SHIFT(MXGETX(IDAT(13),5,6),12) .OR. MXGETX(IDAT(14),1,2) 259
JDAT(22)=MXGETX(IDAT(14),3,8)                           260
JDAT(23)=MXGETX(IDAT(15),1,8)                           261
JDAT(24)=SHIFT(MXGETX(IDAT(15),9,2),36) .OR. MXGETX(IDAT(16),1,6) 262
JDAT(25)=SHIFT(MXGETX(IDAT(16),7,4),24) .OR. MXGETX(IDAT(17),1,4) 263
JDAT(26)=SHIFT(MXGETX(IDAT(17),5,6),12) .OR. MXGETX(IDAT(18),1,2) 264
JDAT(27)=MXGETX(IDAT(18),3,8)                           265
JDAT(28)=MXGETX(IDAT(19),1,8)                           266
JDAT(29)=SHIFT(MXGETX(IDAT(19),9,2),36) .OR. MXGETX(IDAT(20),1,6) 267
JDAT(30)=SHIFT(MXGETX(IDAT(20),7,4),24) .OR. MXGETX(IDAT(21),1,4) 268

```

```

*****  

C DECODE 24-5-22  

*****  

JDAT(31)=MXGETX(IDAT(21),5,4) 269  

JDAT(32)=SHIFT(MXGETX(IDAT(21),9,2),12).OR.MXGETX(IDAT(22),1,2) 270  

JDAT(33)=MXGETX(IDAT(22),3,4) 271  

JDAT(34)=MXGETX(IDAT(22),7,4) 272  

JDAT(35)=MXGETX(IDAT(23),1,4) 273  

JDAT(36)=MXGETX(IDAT(23),5,4) 274  

JDAT(37)=SHIFT(MXGETX(IDAT(23),9,2),12).OR.MXGETX(IDAT(24),1,2) 275  

JDAT(38)=MXGETX(IDAT(24),3,4) 276  

JDAT(39)=MXGETX(IDAT(24),7,4) 277  

JDAT(40)=MXGETX(IDAT(25),1,4) 278  

*****  

C DECODE MAGNETOMETERS  

*****  

IC=5 281  

IW=25 282  

DO 31 II=41,65 283  

JDAT(II)=MXGETX(IDAT(IW),IC,2) 284  

IC=IC+2 285  

IF(IT.LE.9) GO TO 30 286  

IW=IW+1 287  

IC=1 288  

30 CONTINUE 289  

*****  

C DECODE 24-2 ANALOG  

*****  

IW=3 290  

IC=5 291  

DO 31 II=1,36 292  

IANT(II)=MXGETX(IDAT(IW),IC,2) 293  

IC=IC+2 294  

IF(IT.LE.3) GO TO 10 295  

IW=IW+1 296  

IC=1 297  

30 CONTINUE 298  

IANT(37)=MXGETX(IDAT(6),9,2) 299  

IANT(38)=MXGETX(IDAT(7),1,2) 300  

IANT(39)=MXGETX(IDAT(7),3,2) 301  

IANT(40)=MXGETX(IDAT(7),5,2) 302  

*****  

C TRANSFER IANT VALUES AND DETERMINE SSC COUNT VALUE  

*****  

ISSC=0 303  

JSSC=0 304  

DO 31 II=1,36 305  

IF(IANT(II).LT.4000B) IANN(II)=IANT(II) 306  

IF(II.LE.6.AND.IANT(II).LT.4000B) ISSC=II+8 307  

IF((II.GT.6.AND.IT.LE.16).AND.IANT(II).LT.4000B) ISSC=II-4 308  

IF(IT.LE.20) GO TO 20 309  

310  

311  

312  

313  

314  

315  

316  

317  

318  

319

```

```
    IF(IANT(II).LT.4000) JSSC=II-20      320
20  CONTINUE                               321
    IF(JSSC.NE.0) NSSC=JSSC               322
    IF(ISSC.NE.0) NSSC=ISSC               323
    JANN(1,NSSC)=IANT(37)                324
    JANN(2,NSSC)=IANT(38)                325
    JANN(3,NSSC)=IANT(39)                326
    JANN(4,NSSC)=IANT(40)                327
    RETURN                                328
    END                                   329
```

APP-P-1 - 8

```

SUBROUTINE S2RPK(JDAT,IANN,KDAT,KANN,NSSC)          330
***** ****
C 1975 SUBPROGRAM. E. HOLEMAN. LAST ALTERED 21 NOV 75. 331
C 1975 S3-2 DATA REDUCTION SYSTEM. CREATED 18 NOV 75 332
***** ****
C REPACK DATA MATRIX AND HOUSEKEEPING INFO FILE FORMAT. 333
***** ****
C
DIMENSION JDAT(65),IANN(36),KDAT(27),KANN(17),      334
+IBIT(65),NHK(7)                                     335
DATA IBIT /50,4*(24,18,18),F0,16*48,10*24,25*9/
IWD=1                                                 336
IBT1=60                                              337
DO 60 IT=1,27                                         338
KDAT(II)=0B                                           339
CONTINUE
DO 11 IT=1,65                                         340
NBT=IBIT(II)
CONTINUE
IBT2=IBT1-NBT+1                                       341
IF(IBT2.LE.0) GO TO 20                                342
KDAT(IWD)=ISBYTX(IBT2,NBT,KDAT(IWD),JDAT(IT))    343
GO TO 30
CONTINUE
NBT=NBT-IBT1                                         344
KDAT(IWD)=ISBYTX(1,IBT1,KDAT(IWD),SHIFT(JDAT(I)), -NBT)) 345
IBT1=60
IWD=IWD+1
GO TO 40
CONTINUE
IBT1=IBT2-1
IF(IBT1.GT.0) GO TO 10
IWD=IWD+1
IBT1=60
CONTINUE
NHK(1)=20+NSSC
NHK(2)=NSSC+4
NHK(3)=NSSC-6
IF(NHK(3).GT.6) NHK(3)=0
IF(NHK(2).LT.7) NHK(2)=0
NHK(4)=37+4*(NSSC-1)
NHK(5)=NHK(4)+1
NHK(6)=NHK(5)+1
NHK(7)=NHK(6)+1
DO 50 II=1,7
IF(NHK(II).LE.0) GO TO 50
JJ=MOD(NHK(II),5)
IF(JJ.EQ.0) JJ=5
IIA=(NHK(II)-1)/6+1

```

JJA=55-9*JJ	381
IF(IANN(NHK(IT)).EQ.40009) TANN(NHK(TT))=4009	382
KANN(IIA)=ISBYTK(JJA,9,KANN(IIA),IANN(NHK(IT)))	383
FO CONTINUE	384
RETURN	385
END	386

APP-B- 1 - 10

SUBROUTINE TDATB(L, TM, MON, HR, JD, MODE)	387
*****	388
C 1975 SUBPROGRAM. E. HOLEMAN. LAST ALTERATION 16 MAR 77	389
C CREATED 12 DEC 75	390
*****	391
C THE SUBPROGRAM FILLS IN THE MISSING PARAMETERS TO GIVE	392
C THE COMPLETE TIME DESCRIPTION LISTED IN THE TABLE	393
C BELOW WITH THE INPUT SPECIFIED BY MODE.	394
*****	395
C DEFINITION OF PARAMETERS.	396
C L(1) YEAR	397
C L(2) DAY	398
C L(3) HOUR	399
C L(4) MINUTE	400
C L(5) SECOND	401
C L(6) MICROSECOND	402
C L(7) ELAPSED TIME IN SECONDS SINCE 0.000 IEPOC2 TO TIME	403
C DEFINED BY L(19 - L(6))	404
C TM SAME AS L(7) IN DECIMAL FRACTION FORM WITH -(6)	405
C ADDED	406
C HR TIME OF DAY IN HOUR + FRACTION	407
C JD MODIFIED JULIAN DAY RELATIVE TO EPOCH IEPOC1	408
C MON ALPHANUMERIC DATE IN FORM DD MON YR	409
*****	410
C MODE IS A TWO CHARACTER OCTAL FLAG DESCRIBING THE INPUT	411
C CONDITIONS, EACH CHARACTER OF WHICH ACTS AS A 4	412
C POSITION SWITCH. THE FIRST CHARACTER (LEFTMOST) SPECIFIES	413
C THE SOURCE OF THE YEAR AND DAY AS FOLLOWS.	414
*****	415
C = 0 => L(1),L(2) ARE INPUT	416
C = 1 => L(1),L(2) TO BE CALCULATED FROM JD MOD IEPOC1	417
C = 2 => L(1),L(2) TO BE CALCULATED FROM L(7)	418
C = 4 => L(1),L(2) TO BE CALCULATED FROM TM	419
*****	420
C THE SECOND CHARACTER (RIGHTMOST) SPECIFIES THE SOURCE	421
C OF L(3) THROUGH L(6)	422
*****	423
C = 0 => -(3-6) ARE INPUT	424
C = 1 => L(3-6) TO BE CALCULATED FROM HR	425
C = 2 => -(3-6) TO BE CALCULATED FROM L(7)	426
C = 4 => -(3-6) TO BE CALCULATED FROM TM	427
*****	428
C ALL SIXTEEN COMBINATIONS OF THE TWO SWITCHES ARE ALLOWED.	429
*****	430
DIMENSION L(10)	431
*****	432
*****	433
*****	434
*****	435
*****	436
DIMENSION L(10)	437

```

      DATA IEP01,IEP02,CYR,LYR          438
      +/1950,1972,1,1/                   439
      IF(MODE.GT.44B) GO TO 100        440
      IF(MODE.LE.7B) GO TO 10          441
      C******
      C  CALCULATE YEAR AND DAY       442
      C******
      IF((MODE.AND.10B).NE.10B) GO TO 20 443
      CALL JULEO(JD,L(1),L(2),IEP01,MON,0) 444
      GO TO 10                         445
      20  CONTINUE                      446
      TTM=TM                           447
      IL7=L(7)                         448
      IF(MODE.GE.+0B) TL7=TM           449
      L(7)=IL7                         450
      NDAY=L(7)/86400                  451
      NYEAR=NDAY/365                  452
      L(1)=NYEAR+IEP02                453
      L(2)=NDAY-NYEAR*365-(NYEAR+CYR)/4+1 454
      IF(L(2).GE.1) GO TO 10          455
      L(1)=L(1)-1                     456
      L(2)=366                         457
      10  CONTINUE                      458
      IF(L(1).LT.100) L(1)=L(1)+1900 459
      C******
      C  CALCULATE HR                  460
      C******
      IMD=MODE.AND.7B                 461
      IF(IMD.E.1) GO TO 30             462
      IF(IMD.GT.1) GO TO 40             463
      HR=FLOAT(L(3)*3600+L(4)*60+L(5))/3600.+FLOAT(L(6)) 464
      +/1.E06/3600.
      GO TO 50                         465
      40  CONTINUE                      466
      IL7=L(7)                         467
      TTM=TM                           468
      IF(IMD.E.2) TTM=TL7              469
      HR=TTM/3600.
      IHRE=HR                          470
      HR=FLOAT(MOD(THR,24))+HR-FLOAT(IHRE) 471
      70  CONTINUE                      472
      C******
      C  CALCULATE L(3) -> L(6)       473
      C******
      L(3)=HR                          474
      DHR=(HR-FLOAT(L(3)))*60.         475
      L(4)=DHR                         476
      DHR=(DHR-FLOAT(L(4)))*60.         477
      L(5)=DHR                         478
      L(6)=(DHR-FLOAT(L(5)))*1.E06     479
      IF(L(6).GE.999998) L(5)=L(5)+1   480
                                              481
                                              482
                                              483
                                              484
                                              485
                                              486
                                              487
                                              488

```

```

        IF(L(6).GE.999998) L(6)=0          489
      FC  CONTINUE                         490
*****                         491
C  CALCULATE L(7) AND TM               492
    IF(IMD.LT.2) GO TO 60                493
    IF(IMD.EQ.4) L(7)=TM                 494
    IF(IMD.EQ.2) TM=FLOAT(L(7))+FLOAT(L(6))/1.E06 495
    GO TO 70                496
      FC  CONTINUE                         497
    L(7)=L(5)+60*(L(4)+6)* (L(3)+24*(365*(L(1)-IEPC2)+ 498
    +(L(1)-IEPC2+LYR)/+L(2)-1))           499
    TM=FLOAT(L(7))+FLOAT(L(6))/1.E06       500
  70  CONTINUE                           501
    CALL JULED(JD,L(1),L(2),IEPC1,MON,1) 502
    RETURN                               503
  100 CONTINUE                           504
*****                         505
C  RESET EPOCHS                         506
*****                         507
      IEPC1=L(1)                         508
      IEPC2=L(2)                         509
      KYR=MOD(IEPC1-1,4)                  510
      LYR=MOD(IEPC2-1,4)                  511
      RETURN                               512
      END                                513

```

```

SUBROUTINE JULED(JD,LYR,LOA,IEPC,MON,MODE)      514
DIMENSION MONA(12),MONB(12)                      515
DATA MONA /3HJAN,3HEFR,3HMAR,3HAPR,3HMAY,3HJUN,3HJUL,
+3HAUG,3HSEP,3HOCT,3HNNOV,3HDEC/                516
DATA MONB /31,28,31,30,31,30,31,31,30,31,30,31/
MEPC=MOD(IEPC-1,4)                                518
IF(MODE.NE.0) GO TO 10                            519
10 *****
C  DERIVE LYR AND LOA FROM JD,IEPC              520
C *****
      NDLYR=JD/365                                 521
50  CONTINUE
      LYR=IEPC+NDLYR                               522
      LOA=JD-365*(NDLYR-(NDLYR+MEPC)/4+1)        523
      IF(LOA.GT.0) GO TO 20                         524
      NDLYR=NDLYR-1                                525
      GO TO 50                                     526
10  CONTINUE                                         527
C *****
C  DERIVE JD FROM LYR,LOA                         528
C *****
      IF(LYR.LT.100) LYR=1900+LYR                  529
      NDLYR=LYR-IEPC                               530
      JD=365*(NDLYR+(NDLYR+MEPC)/4+LOA-1)         531
20  CONTINUE                                         532
C *****
C  DERIVE MON FROM LYR,LOA                         533
C *****
      MYR=MOD(LYR,100)                            534
      IF(MOD(LYR,4).EQ.0) MONB(2)=29             535
      LOA=LOA
      DO 30  II=1,12
      IMON=II
      IF(LOA.LE.MONB(II)) GO TO 40
      LOA=LOA-MONB(II)
30  CONTINUE                                         536
      IT=12
40  CONTINUE                                         537
      ENCODE(10,4001,MON)  LOA,MONB(II),MYR       538
4001  FORMAT(1X,I2,1X,A3,I3)                      539
      MONB(2)=23
      RETURN
      END

```

```

SUBROUTINE S2PAL(IND,LDAT,ICH)          557
*****                                     558
C 1975   SUBPROGRAM. E. HOLEMAN. LAST ALTERED 19 DEC '75 559
C 1975   S3-2 DATA REDUCTION SYSTEM. CREATED 18 NOV 75 560
*****                                     561
C UNPACK P-ALPHA DATA WORD INTO THREE COMPONENTS AND OVERFLOW 562
C BITS.                                         563
*****                                     564
C DIMENSION LDAT(4,9)                         565
*****                                     566
C INVERT TWO                                     567
*****                                     568
JWD=CB                                     569
DO 10 II=1,56                                570
JWD=SHIFT(JWD,1).OR.LBYTX(II,1,IWD)        571
10 CONTINUE                                    572
ICH=LBYTX(54,3,JWD)                         573
ICH=TCH+1                                     574
LDAT(1,ICH)=LBYTX(37,16,JWD)                575
LDAT(2,ICH)=LBYTX(18,18,JWD)                576
LDAT(3,ICH)=LBYTX(1,16,JWD)                 577
LDAT(4,ICH)=LBYTX(53,1,JWD)                 578
LDAT(4,ICH)=SHIFT(LDAT(4,ICH),1).OR.LBYTX(36,1,JWD) 579
LDAT(4,ICH)=SHIFT(LDAT(4,ICH),1).OR.LBYTX(17,1,JWD) 580
RETURN                                       581
END                                         582
                                              583
                                              584
                                              585

```

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```

1001 FORMAT(//5X,6A10)                                537
      WRITE(IUNT,2002)                                538
1002 FORMAT(4X,3I4 *,* 24-4 ANALOG*,5X,3I4 *,7X,*24-4 DIGIT*,
      *TAL*,6X,3I4 *,*24-2*,3I4 * 5X,*24-2 DIGITAL (SUMS + AVER*
      *AGES + NO. OF OBSERVATIONS*)                  540
      WRITE(IUNT,2003)                                541
1003 FORMAT(4X,3I4 *,* AVERAGES*,7X,3I4 *,7X,* AVERAGES*,
      *9X,3I4 *,*ANAL*,3I4 *)                         542
      DO 80 II=37,68
      ISAN(II)=ISAN(II)+ISAN(II+32)                  543
80   CONTINUE                                         544
      DO 11 II=1,10
      IF(ISAN(II+6).GT.0) MOUT(1,II)=FXXX(ISAN(II+6)) 545
11   CONTINUE                                         546
      DO 21 II=1,8
      DO 21 JJ=1,4
      IF(JSAN(JJ,II).GT.0) MOUT(JJ+1,II)=FXXX(JSAN(JJ,II)) 547
21   CONTINUE                                         548
      DO 31 II=1,6
      IF(ISAN(II).GT.0) MOUT(11,II)=FXXX(ISAN(II))       549
31   CONTINUE                                         550
      DO 40 II=1,8
      IF(JSOA(1,II).GT.0) MOUT(6,II)=SHIFT(JSOA(1,II),-45) 551
      DO 40 JJ=1,4
      IF(JSOA(JJ,II).GT.0) MOUT(JJ+6,II)=FXXX(JSOA(JJ,II)) 552
40   CONTINUE                                         553
      DO 51 II=1,12
      MOUT(II+11,1)=ISDA(II).AND.MASKR               554
      MOUT(II+11,5)=ISDA(II+6).AND.MASKR               555
      IF(ISDA(II).GT.0) MOUT(II+11,3)=SHIFT(ISDA(II),-45) 556
      IF(ISDA(II+6).GT.0) MOUT(II+11,7)=SHIFT(ISDA(II+6),-45) 557
      IF(ISDA(II).GT.0) MOUT(II+11,2)=FXX((ISDA(II)))    558
      IF(ISDA(II+6).GT.0) MOUT(II+11,6)=FXXX(ISDA(II+6)) 559
51   CONTINUE                                         560
      DO 230 II=1,10
      II1=MOUT(II)                                    561
      WRITE(IUNT,2011) II,(MOUT(I,II),I=1,II1)          562
230  CONTINUE                                         563
60   CONTINUE                                         564
      IFGB=JSOA(2,5).AND.MASKR                      565
      IF SHIFT(JSOA(2,5),-45).LT.4) IFGB=1            566
      DO 70 II=1,100
      IF(II.LE.58) KSAN(II)=KSAN(II)+ISAN(II)        567
      ISAN(II)=0                                       568
      IF(II.GT.44) GO TO 70                           569
      IF(IFGA.EQ.1.AND.II.GT.12) KSDA(II)=KSDA(II)+ISDA(II) 570
      IF(IFGA.NE.1) KSDA(II)=KSDA(II)+ISDA(II)        571
      IF(IFGB.LT.5.AND.II.GT.12) TCAL(II)=TCAL(II)+ISDA(II) 572
      IF(IFGA.EQ.1.AND.II.LE.12) TCAL(II)=TCAL(II)+ISDA(II) 573
      ISDA(II)=0                                       574
70   CONTINUE                                         575

```

```

      RETURN          688
190  CONTINUE        689
*** *
? PRINT OUT TOTALS FOR FILE PAGE        690
*** *
      DO 220 II=1,12          691
      JOUT(II)=KSDA(II).AND.MASKR        692
      IF(II.GT.3) GO TO 220        693
      JOUT(II+12)=LSDA(1,II).AND.MASKR        694
      JOUT(II+20)=LSDA(2,II).AND.MASKR        695
      JOUT(II+28)=LSDA(3,II).AND.MASKR        696
220  CONTINUE        697
      WRITE(8,2005) IGT3,JOUT        698
2005 FORMAT(1X,I5,12I10/(6X,8I10))        699
      WRITE(IUNT,2001) (MSG(I),I=1,3),MSG(3),MSG(10)        700
      WRITE(IUNT,2002)        701
      WRITE(IUNT,2003)        702
      DO 100 IT=1,10        703
      IF(KSAN(IT+6).GT.0) MOUT(1,IT)=FXXX(KSAN(IT+6))        704
100  CONTINUE        705
      DO 120 IT=1,8        706
      DO 120 JJ=1,4        707
      IF(LSAN(JJ,IT).GT.0) MOUT(JJ+1,IT)=FXXX(LSAN(JJ,IT))        708
120  CONTINUE        709
      DO 130 IT=1,6        710
      IF(KSAN(IT).GT.0) MOUT(11,IT)=FXXX(KSAN(IT))        711
130  CONTINUE        712
      DO 140 IT=1,8        713
      IF(LSDA(1,IT).GT.0) MOUT(6,IT)=SHIFT(LSDA(1,IT),-45)        714
      DO 140 JJ=1,4        715
      IF(LSDA(JJ,IT).GT.0) MOUT(JJ+6,IT)=FXXX(LSDA(JJ,IT))        716
140  CONTINUE        717
      DO 150 IT=1,6        718
      MOUT(IT+11,1)=KSDA(IT).AND.MASKR        719
      MOUT(IT+11,5)=KSDA(IT+6).AND.MASKR        720
      IF(KSDA(IT).GT.0) MOUT(IT+11,3)=SHIFT(KSDA(IT),-45)        721
      IF(KSDA(IT+6).GT.0) MOUT(IT+11,7)=SHIFT(KSDA(IT+6),-45)        722
      IF(KSDA(IT).GT.0) MOUT(IT+11,2)=FXXX(KSDA(IT))        723
      IF(KSDA(IT+6).GT.0) MOUT(IT+11,6)=FXXX(KSDA(IT+6))        724
150  CONTINUE        725
      DO 160 IT=1,10        726
      IT1=NOUT(IT)
      WRITE(IUNT,2011) IT,(MOUT(T,IT),I=1,IT1)        727
2011 FORMAT(2X,I2,2H *,5(1X,I3),7H *,I3,1X,I4,
      *1X,I7,1X,I6,1X,I1,3H *,I4,7H *,I1),5(1X,I9))        728
160  CONTINUE        729
      DO 170 IT=1,68        730
      KSAN(IT)=0        731
      IF(IT.GT.44) GO TO 170        732
      KSDA(IT)=0        733
170  CONTINUE        734

```

```

***+
3 PRINT OUT CALIBRATION DATA SUMMARY
***+
      GLEPA=0.
      IF SHIFT(ICAL(1),-45).EQ.0 GO TO 270
      GLEPA=(FXXX(ICAL(3))-FXXX(ICAL(2)))/(FXXX(ICAL(3))-FXXX
      +(ICAL(4)))/GLEP
270  CONTINUE
      WRITE(IUNT,2006) GLEPA
2006 FORMAT(//5X,*LFPS CALIBRATION DATA. 12 CHANNELS WITH*
      +* SUMS AVERAGES + NUMBER OF OBSERVATIONS*
      +/5X,*LEPS GAIN INDEX = *,F10.5)
      DO 240 II=1,12
      JOUT(II)=ICAL(II).AND.MASKE
      JOUT(II+12)=0
      IF (ICAL(II).GT.0) JOUT(II+12)=FXXX(ICAL(II))
      JOUT(II+24)=SHIFT(ICAL(II),-45)
240  CONTINUE
      WRITE(IUNT,2007) JOUT
2007 FORMAT(5X,12I8)
      WRITE(IUNT,2008)
2008 FORMAT(//5X,*P - ALPHA CALIBRATION DATA. 8 CHANNELS*
      +* FOR COINCIDENCE MODE, FRONT AND BACK DETECTOR*)
      DO 250 II=1,8
      JOUT(II)=0
      JOUT(II+4)=0
      JOUT(II+16)=0
      IF (JCAL(1,II).GT.0) JOUT(II)=FXXX(JCAL(1,II))
      IF (JCAL(2,II).GT.0) JOUT(II+8)=FXXX(JCAL(2,II))
      IF (JCAL(3,II).GT.0) JOUT(II+16)=FXXX(JCAL(3,II))
250  CONTINUE
      WRITE(IUNT,2009) (JOUT(I),I=1,24)
2009 FORMAT(5X,8I8)
      DO 260 II=1,44
      ICAL(II)=0
260  CONTINUE
      RETURN
      END

```

PROGRAM S20MAD(BFILE,CFILE,EMFILE,YFILE,OUTPUT,	10
+TAPE1=BFILE,TAPE2=CFILE,TAPE4=EMFILE,TAPE8=YFILE,	11
+TAPE6=OUTPUT)	12
*****	13
C 1975 PROGRAM. E. APLEMAN. LAST ALTERATION 20 FEB 75	14
C 1975 FROM S20MAD 18 DEC 75.	15
C****	16
C****	17
C IOT1 COUNTS MASTER FRAMES READ	18
C IOT3 COUNTS SECONDS OF DATA PROCESSED.	19
C****	20
C****	21
C PROGRAM REQUIRES 56300 CM STORAGE FOR LOADING.	22
C****	23
C*****	24
DIMENSION FHED(30),IHED(30),KDAT(27,18),IANN(100),	25
+JDAT(65),LDAT(4,8),ATT(2,16),IDA(39),LBL(3)	26
EQUIVALENCE(FHED,IHED)	27
COMMON/USEX/NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,TECI(16),	28
+LV(16),ALPHA(16),BETA(16),SJBFM(16),WPNUM(16),	29
+ZIOTA,ICALL	30
COMMON/DOUT/ RLLV(16),DETLV(16),RELVI(16),DLTECI(16),	31
+ALFLVX(16),ALFLVY(16),ALFLVZ(16),ALPHEX(16),ALFHEY(16),	32
+ALPHFZ(16)	33
COMMON/DJALL/PI,THOPT,RD,DR,SI,CT,J,M	34
COMMON/TIMERS/ JT(8),IT(8)	35
COMMON/ICGEOG/OMEGA,THETA,XTOTA,RNM,XLT,XLG,ALT,XLTM,	36
+XLGM	37
C	38
C****	39
C INITIALIZE FILES AND DM CONSTANTS	40
C****	41
C	42
IDA=DATE(ADAT)	43
ITIM=TIME(ATIM)	44
TO=SECOND(TZZ)	45
2011 FORMAT(1I1,4X,*S3-2) PROCESSING BEGUN FOR S20MA*,5X,A10,	46
+5X,A10)	47
MNEMO=5LCFILE	48
REWIND1	49
REWIND2	50
REWIND4	51
REWIND8	52
IPRINT=0	53
IWHT=2	54
ICOUNT=235	55
NPRINT=300	56
IOT3=0	57
C****	58
C INITIALIZE USER CONSTANTS	59
	60

```

C*****
C NMAX=16
C DO 10 II=1,16
C LV(IT)=1
C IECI(II)=0
C SURFPM(II)=II
C WRDNJM(II)=65
C ALPHA(II)=0.
C BETA(II)=0.
10 CONTINUE
C
C*****  

C CHECK EM DECK TIME CONSTANTS.
C READ TAPE FILE HEADER RECORD.
C*****  

C
C IFGA=0
C CONTINUE
C JSA=1
C JSB=1
C JSC=1
C ICT1=0
C ILN=0
C IPG=0
C ICALL=1
C READ(1) JWD,JGC,(IHED(I),I=1,JWD)
C IF(IFD(1)) 100,90
C CONTINUE
C JSD=0
C ICT3=0
C WRITE(8,2011) ADAT,ATIM
C ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)
4001 FORMAT(R4,R5,2X,A10,1X,A8)
2006 FORMAT(1H1)
C TMA=0.
C IFGA=0
C CALL OM((AB)RT,<T300T)
C ICALL=ICALL+1
C IF(KABORT.EQ.1) GO TO 110
C CALL TDAT3(IT,TMR,MON,HR,JD,OB)
C TMA=TMA
C WRITE(8,2014) (IT(I),I=1,6)
C WRITE(6,2014) (IT(I),I=1,6)
C 2014 FORMAT(5X,* EM TIMES*,5I5,18,I10,I4)
C*****  

C CHECK TAPE TIME CONSTANTS
C*****  

C GMT1=FLOAT(IHED(1))/1000.
C TRATE=FLOAT(IHED(13))/FLOAT(IHED(20))/1000.
C GMT2=GMT1-FLOAT(IHED(17))*TRATE

```

```

IF(IHED(30).NE.5L3FILE) STOP . . . . . 112
IHED(30)=5L3FILE . . . . . 113
CALL TDATB(IT,TMA,MON,FHED(27),THED(26),118) . . . . . 114
WRITE(8,2015) (IT(I),I=1,6) . . . . . 115
WRITE(6,2015) (IT(I),I=1,6) . . . . . 116
2015 FORMAT(5X,*TAPE TIMES*,5I5,18,I10,I4) . . . . . 117
1001 FORMAT(1H1,7A10,F15.3,F10.1,5X,A10) . . . . . 118
20 CONTINUE . . . . . 119
C***** 120
C READ MASTER FRAME 121
C***** 122
READ(1) IWC,IGC,((<DAT(I,J),I=1,IWC),J=1,IGC) . . . . . 123
IF(EOF(1)) 100,30 . . . . . 124
30 CONTINUE . . . . . 125
ICT1=ICT1+1 . . . . . 126
HR=(GMTZ+FLOAT(<DAT(1,1))*TRAT)/3600. . . . . 127
KDAT(27,18)=10HBLK PECOPD . . . . . 128
CALL TDATB(IT,TM,MON,HR,IHED(26),113) . . . . . 129
KABORT=KTBORT=0 . . . . . 130
CALL OM(KABORT,KTBORT) . . . . . 131
IF(KABORT.EQ.1) GO TO 110 . . . . . 132
IF(KTBORT.EQ.1) GO TO 51 . . . . . 133
ICALL=ICALL+1 . . . . . 134
IGC=IGC+1 . . . . . 135
KDAT(27,TGC)=10HATT RECORD . . . . . 136
21 CONTINUE . . . . . 137
CALL GEOGA(TM) . . . . . 138
IF(ICALL.NE.3) GO TO 60 . . . . . 139
FHED(9)=ALT . . . . . 140
FHED(11)=XLAT . . . . . 141
FHED(21)=XIOTA . . . . . 142
FHED(22)=OMEGA . . . . . 143
FHED(23)=THETA . . . . . 144
FHED(24)=XLG . . . . . 145
WRITE(2) JWC,JGC,(FHED(I),I=1,JWC) . . . . . 146
60 CONTINUE . . . . . 147
C . . . . . 148
C***** 149
C SETUP AND PRINT OUT EPHEMERIS INFORMATION 150
C***** 151
C . . . . . 152
IF(MOD(ICK1,4).NE.1) GO TO 41 . . . . . 153
IF(JSA.EQ.0.AND.JSP.EQ.0) GO TO 41 . . . . . 154
ILN=TLN+1 . . . . . 155
IF(MOD(ILN,50).NE.1) GO TO 40 . . . . . 156
IPG=IPG+1 . . . . . 157
WRITE(8,2001) HR,MON,ADAT,TPG . . . . . 158
WRITE(8,2004) LAB_,04EGA,XIOTA . . . . . 159
2004 FORMAT(5X,*ORBIT ID = *,3A10,10X,*SATELLITE RT.*  

    +* ASCENSION = *,F15.3,* INCLINATION = *,F10.3) . . . . . 160
    +* . . . . . 161
2001 FORMAT(1H2//5X,*S3-2 EPHEMERUS FOR*,F10.4, 162

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*1X,A10,7X,*COMPUTER RUN OF *,A10,7X,*PAGE NO. *,I4)      163
  WRITE(8,2002)                                              164
2002 FORMAT(7T25,*GEOFENTRIC*,T60,*GEOMAGNETIC*/          165
  +10X,*TIME*,T20,*LAT*,T30,*LONG*,T38,*ALT*,T4R,        166
  +*THETA*,T59,*LATM*,T68,*LONM*,T77,*?(KM)*)           167
40  CONTINUE                                                 168
  RKM=PNM*1.85325                                         169
  WRITE(8,2003) TT(3),TT(4),TT(5),XLT,XLG,ALT,THETA,       170
  +XLTM,XLGM,RKM                                         171
2003 FORMAT(7X,I2,2I3,F1.3,F10.3,F9.3,5F10.3)           172
*1  CONTINUE                                                 173
  II1=TGC-?                                               174
  DO 90 II=1,II1                                         175
  ICT3=ICT3+1                                             176
  CALL S2UPB(KDAT(1,II),JDAT,KDAT(1,17))                177
2012 FORMAT(2X,I7,3I6,3T5,2X,I5,I8,3I5,2F10.3)          178
  ATT(1,II)=RLLV(II)*RD                                  179
  ATT(2,II)=DETLV(II)*RD                                180
*0  CONTINUE                                                 181
  II3=TGC-1                                               182
  CALL S2HKB(KDAT(1,1),JDAT,KDAT(1,II3),IANN)           183
  ISA=                                                    184
  ISB=                                                    185
  ISC=                                                    186
  DO 150 IT=1,6                                         187
  ISA=ISA+IANN(IT)                                       188
150  CONTINUE                                                 189
  DO 160 IT=7,16                                         190
  ISB=ISB+IANN(IT)                                       191
160  CONTINUE                                                 192
  DO 170 IT=17,36                                         193
  ISC=ISC+IANN(IT)                                       194
170  CONTINUE                                                 195
  JSA=                                                    196
  JSB=                                                    197
  JSC=                                                    198
  IF(IJA.GT.800) JSA=1                                   199
  IF(IJB.GT.1150) JSB=1                                   200
  IF(IJC.GT.2000) JSC=1                                   201
  JSO=ISA+JSB+JSC                                       202
  IF(JSO.EQ.0) GO TO 51                                  203
  IT2=IT
  DO 51 II=1,II1                                         204
  DO 51 JJ=1,2                                         205
  II2=II2+1                                             206
  IDA(II2)=100.*ATT(JJ,IT)+.5                          207
50  CONTINUE                                                 208
*****                                                 209
3  WRITE MASTER FRAME OUTPUT                           210
*****                                                 211
  IDA(1)=4.1+.5                                         212
                                                               213

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IDA(2)=100.*XLT+.5	214
IDA(3)=100.*XLG+.5	215
IDA(4)=100.*THETA+.5	216
IDA(5)=100.*OMEGA+.5	217
IDA(6)=100.*XLTM+.5	218
IDA(39)=100.*XLGM+.5	219
CALL SPP<3((KDAT(1,TGC),IDA,39)	220
51 CONTINUE	221
KTB0PT=0	222
IF(JSD.NE.0) WRITE(2) IWC,IGO,((KDAT(I,J),I=1,IWC),J=1,TGC)	224
GO TO 20	
110 CONTINUE	225
WRITE(8,201) ICALL	226
100 CONTINUE	227
*****	228
3 END OF FILE PROCESSING	229
*****	230
IFGA=IFGA+1	231
IF(IFGA.EQ.1) ENDFILE2	232
IF(IFGA._T.3) GO TO 70	233
120 CONTINUE	234
WRITE(8,2003)	235
WRITE(6,2003)	236
2008 FORMAT(2X,*END OF FILE ON S20MA*)	237
TTT=SECOND(ZZZ)-TC	238
WRITE(8,2003) TTT	239
WRITE(6,2003)	240
>009 FORMAT(2X,*TOTAL PROCESSING TIME FOR S20MA IS*,F10.3)	241
2010 FORMAT(2X,*JOB IS BEING ABORTED BY KABORT AFTER CALL NO.*,[5])	
END	243

SUBROUTINE OM (KABORT,KTBORT)	244
*****	245
*****	24F
*****	247
C 1975 SUBPROGRAM. E. HOLLMAN. LAST ALTERATION 21 FEB 76	248
C 1975 73-2 DATA REDUCTION SYSTEM. FROM RC VERSION 74274	249
C 1975 15 DEC 75	250
C	251
C MAIN SUBROUTINE OF OUTPUT MODULE	VERSION 74091
C B2 MODIFICATION	VERSION 74274
C E2 MODIFICATION	VERSION 75345
C	255
*****	256
C	257
REAL IOTA,MU	258
DIMENSION _V(16),IECI(16),IT(16),	259
* CNU(16,3),CPhi(16,3),CPST(16,3),	260
* TR1(3),TR2(3),TPNU(3),TT/A(3),TOMF(3),	261
* SUBFPM(16),WRONUM(16),ALPHA(16),BETA(16),	262
* ALPH1(16),XP(16),YP(16),ZP(16),ADUM(8)	263
DIMENSION RANGE(3)	264
DIMENSION SEC(30),X0(30),Y0(30),Z0(30),DX0(30),DY0(30),DZ0(30)	
DIMENSION TLIMIT(30),DFNOM(30),FACTDP(70),P0(30),PV0(30),RN0(30),	
CA0(70),SI0(30),CI0(30),HXYC(30),THETAG(30)	267
DIMENSION OMEGAD(30),DOMEGD(30)	268
REAL IOTAC(30)	269
COMMON/TIMERS/JTIMEF,JTIMEU	270
COMMON/ JSEK /NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,IECI,	271
+LV,ALPHA,BETA,SUBFPM,WRONUM,XICTA,ICALL	272
COMMON/ IOGEOG/ OMEG,THET,XIOT,RR,AKLT,AXLG,AALT,XLT4,XLGM	
DIMENSION JTIMEJ(8), JTIMEE(8), JTIMEP(8)	274
COMMON/OUTALL/PI,TWOPR,RD,DP,SI,CI,C,MU	275
COMMON/SPIN/OMEGAS	276
COMMON/OMNWTN/X7,Y7,ZZ,XDZ,YDZ,ZDZ,DFN,FAC,PV,RN,A,IOTA,HXY,	
C OMEGAP,OMEGET,R7	278
COMMON/OUTDTA/ X,Y,Z,XD,YD,ZD,R,THETA	279
COMMON/OUTNHT/EPSSLHN,ITER8N	280
COMMON/OUTOL/SP,CP,SS,CS,ST,CT,RNU,OMEGA,PHI0,PSI0,PHIM,PSIM,J	
COMMON/DLOUT/PLLV(16),DETLV(16),RLECT(16),DLTECI(16),	282
* ALFLVX(16),ALFLVY(16),ALFLVZ(16),	283
* ALPHEX(16),ALPHAY(16),ALPHEZ(16)	284
DATA TOFF/50./	285
DAFLD = 0.0	286
JZ = 1	287
KTRPT=0	288
ICTEM=0	289
IF(ICALL.NE.1) GO TO 51	290
*****	291
C ZERO ERROR CONTROL CONSTANTS.	292
*****	293
KABT=500	294

LABT=600	295
KCOUNT=0	296
EPSLNN = .000000001	297
ITERRN = 25	298
PRINT 1041	299
1041 FORMAT(13H10)OUTPUT MODULE - DM)	300
PI=3.14159265358979	301
TWOPI = 2.433	302
RD = 150./PI	303
DR = PI/180.	304
CE10E1MU=1407645000000000.	305
CF=6076.1155	306
2	307
MU=1.407645E16	308
3 READ ALL DATA REQUIRED FOR THE OUTPUT MODULE.	309
3 NOTATION...	310
3 INPUT DATA SUPPLIED BY EXPERIMENTER--	311
3 NMAX = NUMBER OF EXPERIMENTER WORDS FOR WHICH ATTITUDE	
3 OR EPHEMERIS IS REQUIRED.	313
3 LV(I) = 1 IF LOCAL-VERTICAL ATTITUDE FOR WORD I IS	
3 REQUIRED.	315
3 = 0 OTHERWISE.	316
3 IECT(I) = 1 IF ECI ATTITUDE FOR WORD I IS REQUIRED,	
3 = 0 OTHERWISE.	318
3 IPRT = PRINTOUT FREQUENCY CONTROL	319
3 -1 = NEVER	320
3 0 = EVERY NPRINTH CALL	321
3 1 = EVERY CALL	322
3 THAT = CONTROL FOR DIRECTION COSINES AND/OR	323
3 RT. ASCENSION AND DECLINATION OUTPUT	324
3 IWHAT = 1 - DIR COS ONLY	325
3 IWHAT = 2 - LAMBDA AND DELTA ONLY	326
3 IWHAT = 3 - BOTH	327
3 SUBFRM(I) = IDENTIFIER OF SUBFRAME IN MAIN FRAME FOR	
3 WORD I.	329
3 WRDNUM(I) = IDENTIFIER OF WORD NUMBER I IN SUPERFRAME.	
3 ALPHA(I) = FIRST EULER ANGLE DEFINING ATTITUDE OF	
3 EXPERIMENTER'S EARTH SENSOR W.R.T. SATELLITE	
3 BODY AXES.	333
3 BETA(I) = SECOND EULER ANGLE.	334
3 INPUT DATA FROM ESTIMATION MODULE--	335
3 NCNU = NUMBER OF COEFFICIENTS FOR CURVE FIT OF NU.	
3 NCPHI = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PHIM.	
3 NCPSI = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PSI1.	
3 CNJ = COEFFICIENTS OF CURVE FIT FOR NU.	339
3 CPHI = COEFFICIENTS OF CURVE FIT FOR PHIM.	340
3 CPSI = COEFFICIENTS OF CURVE FIT FOR PSI1.	341
3 RNJAvg = AVERAGE OF ALL VALUES OF NU.	342
3 TVAvg = AVERAGE OF ALL TIMES THAT HORIZON SENSOR	
3 LINE OF SIGHT IS ALONG VERTICAL.	344
3 OMEGAS = AVERAGE SPIN RATE	345

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      TZ      = TIME AT WHICH INITIAL EPHEMERIS DATA APPLIES          347
      PRINT 1030
1000 FORMAT(//1H ,294DATA SUPPLIED BY EXPERIMENTER //)
      READ THE EXPERIMENTER'S DATA.                                     348
      PRINT 1220, (UTIME(I),I=1,5)                                     349
1220 FORMAT(1X,4HYEAR,TE,4X,3HDAY,I4,4X,+HHOUR,T3,4X,6HMINUTE,I3,4X,
      C 74SECONDS,I3)                                                 350
      1031READ(5      ,1200) NMAX, IPRINT, IWHT
1200 FORMAT(3I2)
      IF(IPRINT.GT.0) NPNTNT=IPRINT
      IATTO = 0
      DO 15 I = 1,NMAX
      1031READ(5      ,1010) LV(I), IEPI(I), SUBFRM(I), WRDNUM(I),
      1010*           ALPH1(I), BETA(I)
      1010 FORMAT (2I2,6X4F10.0)
      IATTO = IATTO + IABS(LV(I)) + IABS(IEPI(I))
      PRINT 1500, LV(I), IEPI(I), SUBFRM(I), WRDNUM(I),
      *ALPH1(I) , BETA(I)
      1500 FORMAT(1X,3HLV   , I1, 2X,4HECI   , I1, 15X,
      *      3X,7HSUBFRM   , F4.0, 3X,7HWRDNUM   , F5.0, 3X,6HA_P4
      *      F7.3, 3X,5HBETA   , F7.3)                                    351
      CORRECT FOR THE LOCATION OF THE HDT IN THE DATA FRAME.          352
      1115 DT(I) = ((SUBFRM(I)-1.)*62.5 + (WRDNUM(I)-1.)*.46628125)/1000.
      DT(I)=SUBFRM(I)-0.5
      15 CONTINUE
      *****
      READ THE ESTIMATION MODULE DATA.                                 353
      THIS INPUT BLOCK PUNCHED FROM THE F.M. PROGRAM               354
      READ IN THE EPHEMERIDES FROM EM                                355
      PRINT 119
119 FORMAT(//1X,34HDATA SUPPLIED BY ESTIMATION MODULE//)
      KARDG0 = 1
      CONTINUE
      READ(4,1001) AJUM
1001 FORMAT(8A10)
1105 FORMAT(6X,I4,8X,T7,9X,I2,11X,I2,10X,I2,21X,T2)
      IF(ITEM(4)) 660,50
      50 CONTINUE
      DECODE(80,4001,AJUM) KARDN
      4001 FORMAT(75X,T2)
      ICTEM=ICTEM+1
      IF(ITEM.GT.50) GO TO 660
      IF(KARDN.NE.1) GO TO 50

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DECODE(80,1100,A0JY) (JTIMEE(I),I=1,4),NVECT,KARDN      397
ICTEM=0
JTIMEE(5)=0
JTIMEE(6)=0
PRINT 1220, (JTIMEE(I),I=1,6)                           400
CALL TDATR(JTIMEE,TMM,MON,HR,JD,0RI                   402
JTIMEU(1)=JTIMEE(1)                                     403
JTIMEU(2)=JTIMEE(2)                                     404
JTIMEU(3)=JTIMEE(3)                                     405
JTIMEU(4)=JTIMEE(4)                                     406
JTIMEU(5)=JTIMEE(5)                                     407
JTIMEU(6)=JTIMEE(6)                                     408
JTIMEU(7)=JTIMEE(7)                                     409
JTIMEU(8)=JTIMEE(8)=0                                  410
DO 21 JJ = 1,NVECT                                     411
KARDSQ = KARDSQ + 1                                   412
READ(4,110) SEC(JJ),X0(JJ),Y0(JJ),Z0(JJ),KARDN       413
IF(KARDSQ .NE. KARDN) GO TO 660                      414
KARDSQ = KARDSQ + 1                                   415
READ(4,1120) DX0(JJ),DY0(JJ),DZ0(JJ),KARDN         416
IF(KARDSQ .NE. KARDN) GO TO 660                      417
PRINT 611, SEC(JJ),X0(JJ),Y0(JJ),Z0(JJ)             418
PRINT 615, DX0(JJ),DY0(JJ),DZ0(JJ)                  419
F10 FORMAT(4F SEC,F13.6,4H   X,F17.6,4H   Y,F17.6,4H   Z,F17.6)
F15 FORMAT(        17X,4H   XD,F17.9,4H   YD,F17.9,4H   ZD,F17.9)
1110 FORMAT(4X,F13.6,4X,F16.6,4X,F16.6,4X,F16.6,1X,I2) 422
1120 FORMAT(        21X,F16.9,4X,F16.3,4X,F16.9,1X,I2) 423
21 CONTINUE
KARDSQ = KARDSQ + 1                                   424
READ(4,1125) TLERST,TTLAST,KARDN                    425
IF(KARDSQ .NE. KARDN) GO TO 660                      426
1125 FORMAT(23X,F13.6,3Y,F13.6,26X,I2)              427
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447

C DETERMINE ORBITAL PARAMETERS FOR EACH STATE VECTOR
C
C PRINT 1041
C DO 620 JJ=1,NVECT
C CALL DRBT(X)(JJ),Y0(JJ),Z0(JJ),DX0(JJ),DY0(JJ),DZ0(JJ),DENOM(JJ),
C CFACTOR(JJ),R0(JJ),PVO(JJ),PNO(JJ),A0(JJ),ST0(JJ),CT0(JJ),
C CIOTAC(JJ),HXYS(JJ),THETAC(JJ),OMEGA0(JJ),DOMEG((JJ),JJ,SEC(JJ))
C F20 CONTINUE
C
C COMPUTE EPHemeris ZONE BOUNDARIES
C NMINJS = NVECT - 1
C IF(NVECT .EQ. 1) GO TO 605
C DO 600 IJ = 1,NMINJS
C TLIMIT(IJ) = 0.5*(SEC(IJ) + SEC(IJ+1))
C PRINT 645, IJ,TLIMIT(IJ)
C F00 CONTINUE
C F05 TLIMTT(NVECT) = TTLAST

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      KNDX = 0          448
  F45  FORMAT(10X,7HTLIMIT(,I2,3H) =,E21.9) 449
      5
      6
      7
      KAROSQ = KAROSQ + 1          450
      READ(4,800) IC,NOC,IRD,TIM1,TIM2,KARDN 451
      IF (KAROSQ .NE. KARDN) GO TO 660 452
      DO 61 I=1,NOC 453
      IF (I .EQ. 1) GO TO 777 454
      KAROSQ = KAROSQ + 1          455
      READ (4,300) III, JJJ, KKK, TIM1, TIM2, KARDN 456
      IF (KAROSQ .NE. KARDN) GO TO 660 457
  777 TR1(I) = TIM1          458
      TR2(T) = TIM2          459
      RANGE(I) = TIM2 - TIM1 460
      KAROSQ = KAROSQ + 1          461
      READ (4,301) TRNUC(I), TTVA(I), TOME(I), KARDN 462
      IF (KAROSQ .NE. KARDN) GO TO 660 463
      JH = 0          464
  62  JL = JH + 1          465
      JH = JH + 3          466
      IF (JL.GT.IRD) GO TO 63 467
      KAROSQ = KAROSQ + 1          468
      READ (4,302) CNUC(J,I), J=JL,JH), KARDN 469
      IF (KAROSQ .NE. KARDN) GO TO 660 470
      GO TO 62          471
  63  JH = 0          472
  64  JL = JH + 1          473
      JH = JH + 3          474
      IF (JL.GT.IRD) GO TO 65 475
      KAROSQ = KAROSQ + 1          476
      READ (4,302) CPHT(J,I), J=JL,JH), KARDN 477
      IF (KAROSQ .NE. KARDN) GO TO 660 478
      GO TO 64          479
  65  JH = 0          480
  66  JL = JH + 1          481
      JH = JH + 3          482
      IF (JL.GT.IRD) GO TO 67 483
      KAROSQ = KAROSQ + 1          484
      READ (4,302) CPST(J,I), J=JL,JH), KARDN 485
      IF (KAROSQ .NE. KARDN) GO TO 660 486
      GO TO 66          487
  67  CONTINUE          488
  68  CONTINUE          489
      KAROSQ = KAROSQ + 1          490
      READ(4,805) ETA1D,ETA2D,KARDN 491
      IF(KARDN .NE. KAROSQ) GO TO 660 492
  800 FORMAT(5X,I1,4X,I1,9X,I2,5X,F14.6,5<,F14.6,18X,I2) 493
  801 FORMAT(3X,F17.10,5X,F17.10,5X,F17.10,14X,I2) 494
  802 FORMAT(8X,E17.10,8X,E17.10,8X,E17.10,3X,I2) 495

```

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      25  FURNIT(7X,F12.5,8X,F12.5,38X,T3)          593
      26  CALL DESP1CNU,OPHE,OPSI,NOC,TORDE          594
      27  *****                                         595
      28  GO TO 39          596
      29  560 CONTINUE          597
      30  WRITE (6,691) KAP150,KAR0N          598
      31  587 FORMAT (21H      TENSE ERROR, CARD,T3,17H CONTAINED NUMBER,T3/1) 599
      32  KAR0RT=1          600
      33  RETURN          601
      34  39 CONTINUE          602
      35  FIND THE SINES AND COSINES OF THE INVARIANT ANGLE ETA. 603
      36  FTA1 = ETAA1D * DR          604
      37  FTA2 = ETAA2D * DR          605
      38  SE2 = SIN(ETA2)          606
      39  CF2 = COS(ETA2)          607
      40  SE = SIN(ETA)          608
      41  CE = COS(ETA)          609
      42  PERFORM THE PRELIMINARY TRANSFORMATIONS CORRESPONDING TO 610
      43  THE INVARIANT ANGLES ALPHA, BETA, AND FTA          611
      44  DO 47 I = 1,NMAX          612
      45  ALPH1(I) = ALPHA(I) + DALFA          613
      46  CA = COS(ALPH1(I)*DR)          614
      47  SA = SIN(ALPH1(I)*DR)          615
      48  CB = COS(BETA(I)*DR)          616
      49  SR = SIN(BETA(I)*DR)          617
      50  XP(I) = CA*CB*CE2 - SE2*(SE*SA*CB + CE*SR)          618
      51  YP(I) = (SE*SA*CB + CE*SR)*CE2 + CB*CA*SE2          619
      52  ZP(I) = -CE*SA*CB + SE*SR          620
      53  40 CONTINUE          621
      54  NBP IS NUMBER OF PRINT BLOCKS PER PAGE          622
      55  IF PRINTOUT IS NOT DESIRED, SKIP THIS SECTION          623
      56  KOENOM = 0          624
      57  IF(IPRINT .LT. 0) GO TO 650          625
      58  KCOORD = 0          626
      59  DO 661 KK = 1,NMAX          627
      60  KCOORD = KCOORD + TECI(KK) + LV(KK)          628
      61  CONTINUE          629
      62  IF(KCOORD .EQ. 0) GO TO 655          630
      63  KWHAT = 1          631
      64  IF(IWHAT .EQ. 3) KAHAT = 2          632
      65  KOENOM = KCOORD*KAHAT + NMAY + 3          633
      66  CONTINUE          634
      67  FOR POSITION          635
      68  KOENOM = KOENOM + 3          636
      69  NBP = 54/KOENOM          637
      70  IF(NBP .EQ. 0) NBP = 1          638

```

```

550 CONTINUE          550
      NR=NRD          551
      RETURN          552
51 CONTINUE          553
*****
2 NORMAL ENTRY POINT TO SUBPROGRAM.          554
*****
3 *****
S      =   FLOAT(JTIMEU(7) - JTIMEE(7))          555
C      +   FLOAT(JTIMEU(6) - JTIMEE(6))/1000000.          556
IF((TLFRST-S)*(S-TTLAST)) 57,52,52          557
52 CONTINUE          558
IF(KCOUNT.LT.30) PRINT 1510, ICALL          559
1510 FORMAT(424 TIME OF CALL OUTSIDE RANGE OF ESTIMATE ,I10)          560
KCOUNT=KCOUNT+1          561
KTBPT=1          562
IF(KCOUNT.GE.KAST) GO TO 555          563
RETURN          564
53 CONTINUE          565
7
IF(NVECT.EQ.1) GO TO 635          566
DO 615 IJ = 1,NMTNJS          567
IF(S - TLIMIT(IJ)) 630,630,625          568
625 CONTINUE          569
635 IJ = NVECT          570
636 CONTINUE          571
IF(KNDX .EQ. IJ) GO TO 640          572
THET1 = THETAC(IJ)          573
XZ = X0(IJ)          574
YZ = Y0(IJ)          575
ZZ = Z0(IJ)          576
X0Z = DX0(IJ)          577
Y0Z = DY0(IJ)          578
Z0Z = DZ0(IJ)          579
DEN = DENOM(IJ)          580
FAC = FACTOR(IJ)          581
RV = RVO(IJ)          582
RN = RNC(IJ)          583
A = A0(IJ)          584
SI = SI0(IJ)          585
CI = CI0(IJ)          586
HXY = HXY0(IJ)          587
IOTA = IOTAO(IJ)          588
OMEGAZ = OMEGA0(IJ)          589
OMEGAT = OMEG0(IJ)          590
RZ = R0(IJ)          591
KNDY = IJ          592
640 CONTINUE          593
6
6

```

```

C      START OF MAIN LOOP          501
C
C      TDEL=S-SEC(IJ)           502
C      OMFG=OMEGAZ+OMEGDT*TDEL   503
C      OMEG=OMEG*RD             504
C      CALL NWT4(TDEL,<ABORT>),RETURNS(39) 505
C      THET=THETA*RD            506
C      XIOT=ATAV2(SI,CI)*RD    507
C      RR=R                     508
C
? J = 1                         509
C
C      CORRECT THE TIME FOR LOCATION IN MATN FRAME. 510
C
C      TS = DT(J) + S          511
C
C      FIND THE TIME FROM THE INITIAL TIME OF EPHEMERIS ACQUISITION. 512
C
C      TDELT = TS - SEC(TS)     513
C
C      UPDATE OMEGA.           514
C
C      OMEGA = OMEGAZ + OMEGDT*TDELT 515
C      OMEGAD = OMEGA*RD          516
C
C      COMPUTE PRESENT VALUES OF EPHEMERES. 517
C
C      CALL NWTN(TDELT,<ABORT>),RETURNS(38) 518
C
C      UPDATE THETA             519
C
C      THETAD = THETA*RD        520
C
C      IF(J .GT. NMAX) GO TO 5 521
C
C      IF NO ATTITUDE IS REQUIRED, GO TO 100 522
C
C      IF(LV(J) + IECI(J)) 100, 100, 5 523
C
5 CONTINUE                      524
C
C      ATTITUDE IS REQUIRED. FIND THE VALUE OF TIME FOR THE CURVE FIT 525
C
C
J7 = 1                           526
IF (NOC.EQ.1) GO TO 68          527
IF (TS.GT.TR1(2).AND.TS.LE.TR2(2)) J7 = 2 528
IF (NOC.EQ.2) GO TO 68          529
IF (TS.GT.TR1(3).AND.TS.LE.TR2(3)) J7 = 3 530
68 CONTINUE                      531
RNUAVG = TRNU(J7)               532
TTVAVG = TTVA(J7)              533

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```

      OMEGAS = TOME(JZ)          652
      FIND PHIM, PSIM, AND THE DECIMAL PART OF NU 653
      TSS = TS - TVAVG          654
      CALL FIT(PHIMD,RANGE(JZ),OPHI(1,JZ),TOPD,TSS) 655
      CALL FIT(PSIMD,RANGE(JZ),OPSI(1,JZ),TOPD,TSS) 656
      CALL FIT(DECNU,RANGE(JZ),CNJ(1,JZ),DOPD,TSS) 657
      PHIM = PHIMD*DR           658
      PSIM = PSIMD*DR           659
      FIND NU IN REVOLUTIONS. 660
      RNU = OMEGAS * (TS - TVAVG) / TWOPi + RNUAVG + 0.5 661
     INU = RNU                662
      FINU = INU                663
      RNUREV = RNJ - FINU - DECNU 664
      7685 CONTINUE               665
      IF (RNUREV .GE. 1.0) RNUREV = RNUREV - 1.0 666
      IF (RNUREV .LT. 0.0) RNUREV = RNUREV + 1.0 667
      IF (RNUREV .GE. 1.0) GO TO 7685 668
      IF (RNUREV .LT. 0.0) GO TO 7685 669
      FIND NJ IN RADIANS. 670
      RNU = RNUREV*TWOPi 671
      FIND NJ IN DEGREES 672
      RNUdeg = RNUREV*360. 673
      FIND PHIM AND PSIM IN DEGREES FOR OUTPUT 674
      COMPUTE TRIG FUNCTIONS OF ANGLES FOR LAMDFL 675
      CTHETA = COS(THETA) 676
      CT = CTHETA 677
      STHETA = SIN(THETA) 678
      ST = STHETA 679
      CPHTM = COS(PHIM) 680
      SPSIM = SIN(PSIM) 681
      SPHI* = SIN(PHIM) 682
      CPSIM = COS(PSIM) 683
      FIND PHI AND PSI IN LOCAL-VERTICAL COORDINATES (PHI0 AND PSI0). 684
      SS = SPSTM*CT - SPHIM*ST*CPSIM 685
      PSI0 = ATN(SS) 686
      CS = COS(PSI0) 687
      TOP = ST*SPSTM + CT*PSIM*CT*SPHIM 688
      BOT = CPHTM*CPSIM 689

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```

PHIO = ATAN(TOP/ROT)          703
IF(BOT) 10,11,11               704
10 PHIO = PHIO + PT           705
GO TO 13                      706
11 IF(TOP) 12,13,13           707
12 PHIC = PHIC + TWOPI        708
13 CONTINUE                    709
SP = SIN (PHIO)               710
CP = COS(PHIO)                711
PHID = PHID*RD                712
PSID = PSID*RD                713
IF(J .GT. NMAX) GO TO 200     714
715
2 FIND THE RIGHT ASCENSION AND DECLINATION OF THE EXPERIMENTER'S
2 SENSOR IN ECT AND/OR LOCAL-VERTICAL COORDINATES.      717
2                                         718
2 CALL LAMTEL(XP(J),YP(J),ZP(J),LV(J),TET(J))          719
2                                         720
2 100 J = J + 1             721
2                                         722
2 IF THIS IS THE EXPERIMENTER'S LAST WORD IN MATH FRAME, PRINT
2 OUT THE RESULTS - IF REQUIRED                         724
2 IF(J .LE. NMAX) GO TO 3       725
TS = S           726
GO TO 4           727
2                                         728
2 200 CONTINUE          729
2                                         730
2 SEE IF THE RESULTS ARE TO BE PRINTED      731
2 IF(IPRINT)600,300,300          732
300 IF(ICOUNT = NPRINT) 325, 350, 350      733
325 ICOUNT = ICOUNT + 1          734
GO TO 500          735
350 ICOUNT = 1          736
2                                         737
2 OUTPUT IS REQUIRED AT THIS STEP      738
2 NB=NBP+1          739
2 IF(NH,LF,NBP) GO TO 1          740
2 PRINT 1041          741
2 NB = 1           742
1 PRINT 1042          743
2 PRINT 1042          744
1042 FORMAT(1X)
JTIMEP(7) = JTIMEJ(7)          745
JTIMEP(8) = JTIMEJ(6)          746
CALL TDATB(JTIME, TIMM, MON, HR, JD, 443)      747
SECGMT = FLOAT(JTIMEP(5)) + FLCAT(JTIMEP(6))/1000000. 748
PRINT 1220, (JTIMEP(J), J=1,4), SECGMT          749
PRINT 1040, THETA0, OMEGAD, S, X, Y, Z, X0, Y0, Z0, R 750
1040 FORMAT(1X10THETA      ,E15.6,5X,   10HDELA    ,E15.6,5X,
*           10HTIME      ,F15.6,7 1X,      10HX      ,E15.6,5X,

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```

*      10HY      ,E15.6,5X,    10HZ      ,E15.6,7
*      1X,10HXD    ,E15.6,5X,    10HYD    ,E15.6,5X,
*      10HZD    ,E15.6,7 1X,    10HF      ,E15.6,7
*      IF(IINTD .LE. 0) GO TO 415          757
*      PRINT 1050, PHIMD, PHI0D, RNUDEG, PSI0D, PSI0D          758
1050 FORMAT( 1X,10HPHFM    ,E15.6,5X,    10HPHJO ,E15.6,5X,
*      10HNU    ,E15.6,7 1X,    10HPSTM ,E15.6,5X,
*      10HPSTD ,E1F.6)          761
415 CONTINUE          762
DO 30 JJ=1,NMAX          763
IF(LV(JJ)+IECI(JJ)) 30, 30, 20          764
***N*TATION**          765
          766
2      ALFLVX,ALFLVY,AND ALFLVZ ARE THE DIRECTION COSINES IN          768
2      THE LOCAL VERTICAL COORDINATE SYSTEM          769
2
2      ALPHEX, ALPHY, AND ALPHEZ ARE THE DIRECTION COSINES IN          771
2      THE EARTH-CENTERED-COORDINATES SYSTEM          772
2
20 CONTINUE          773
IWCPY = 42DNUM(JJ)          774
TSUB = SURFM(JJ)          775
PRINT 1140, IWCPY, TSUB          776
1140 FORMAT(/10X25HATTITUDE FOR WORD NUMBER , I3,13H OF SURFNAME , I3)
IF(LV(JJ)) 44, 44, 22          778
30 CONTINUE          779
IF(INHAT - 2) 41, 42, 43          780
40 CONTINUE          781
7
7      ONLY DIRECTION COSINES ARE DESIRED - IN LV COORDS.          782
PRINT 1170, ALFLVX(JJ),ALFLVY(JJ),ALFLVZ(JJ)          783
1170 FORMAT(2X13HALPHA X LV E16.3,3X10HALPHA Y LV E16.8,
X 3X10HALPHA Z LV E16.8)          785
GO TO 44          786
42 CONTINUE          787
7
7      BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-LV          788
PRINT 1170, ALFLVX(JJ),ALFLVY(JJ),ALFLVZ(JJ)          789
43 CONTINUE          790
RLLVD = RLLV(JJ)*PI          791
DLTLVD= DELTLV(JJ)*PI          792
PRINT 1150, RLLVD, DLTLVD          793
1150 FORMAT(10X,10HLAMDA LV ,E15.6,5X, 10HDELTALV ,E15.6)          794
44 CONTINUE          795
27 IF(IECI(JJ).LE.0) GO TO 30          796
IF(INHAT - 2) 46, 47, 48          797
46 CONTINUE          798
7
7      ONLY DIRECTION COSINES ARE DESIRED - IN ECT COORDS.          799
FRTNT 1180, ALPHEX(JJ),ALPHY(JJJ),ALPHEZ(JJ)          800
1180 FORMAT(2X13HALPHAX ECI E16.4,3X10HALPHAY ECI E16.8,
X 3X10HALPHAZ ECI E16.8)          801

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      GO TO 49          805
41 CONTINUE          806
C      BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-FCT    807
      PRINT 1180, ALPHEX(JJ),ALPHFY(JJ),ALPHFZ(JJ)                      808
47 CONTINUE          809
      RLECD = RLECT(JJ)*RD          810
      RTECD = RLTECI(JJ)*RD          811
      PRINT 1160, RLECD,RTECD          812
1160 FORMAT(10X,10HLLAMDA FCT ,E15.6,5X,10HDLTA FCT ,E15.6)        813
48 CONTINUE          814
30 CONTINUE          815
      GO TO 500          816
555 CONTINUE          817
      KABORT=1          818
      IF(KCOUNT.LT.LABT) PRINT 2001,KCOUNT,KABT          819
      IF(MOD(KCOUNT,100).EQ.0) PRINT 2001,KCOUNT,KAET          820
2001 FORMAT(2X,"KCOUNT",TS," KAET",IE)          821
500 CONTINUE          822
      J = NMAX          823
      RETURN          824
      END          825

```

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```

SUBROUTINE ORBT(X,Y,Z,XD,YD,ZD,DENOM,FACTOR,F,RV,RN,A,SIO,CIO,
1IOTA,HXY,THETA,OMEGA,OMEGDT,ISEG,SEG) 827
2
3      REAL   IOTA,N,MU,FACTAD 828
4      COMMON/OJTA/LPI,THOPI,RD,DR,SI,CI,C,MU 829
5      COMMON/OMTD/LINPUT,LOUTPUT 830
6      X=X/` 871
7      Y=Y/` 872
8      Z=Z/` 873
9      XD=X/`/C 834
10     YD=Y/`/C 835
11     ZD=Z/`/C 836
12
13     COMPUTE CONSTANTS FOR COMPUTATION OF THETA, OMEGA, IOTA 837
14
15     RE= SQR(X**2+Y**2+Z**2) 840
16     VE= SQR(XD**2+YD**2+ZD**2) 841
17     RV=X*XD+Y*YD+Z*ZD 842
18     HE= SQR((R**2)-RV**2) 843
19     HX=Y*ZD-Z*YD 844
20     HY=Z*XD-X*ZD 845
21     HZ=X*YD-Y*XD 846
22     HXY= SQR((HX**2+HY**2)) 847
23
24     COMPUTE THETA, OMEGA, TOTA 848
25
26     SOM=IX/HXY 849
27     COM=-HY/IXY 850
28     OMEGA= ASIN(SOM) 851
29     SIO=HXY/I 852
30     CIO=IZ/I 853
31     IOTA= ASIN(SIO) 854
32     STH=(Z*H)/(R*HXY) 855
33     CTH=(Y*HX-X*HY)/(R*HXY) 856
34     THETA= ASIN(CTH) 857
35
36     QUADRANT LOGIC FOR THETA, OMEGA, TOTA 858
37
38     IF(SOM.GE.0.0.AND.COM.GE.0.0) OMEGA=OMEGA 859
39     IF(          .2.0M.LE.0.0) OMEGA=PI-OMEGA 860
40     IF(SOM.LE.0.0.AND.COM.GE.0.0) OMEGA=2.*PI+OMEGA 861
41     IF(SIO.GE.0.0.AND.CIO.GE.0.0) IOTA=IOTA 862
42     IF(          .2.0I.LE.0.0) IOTA=PI-IOTA 863
43     IF(SIO.LE.0.0.AND.CIO.GE.0.0) IOTA=2.*PI+IOTA 864
44     IF(STH.GE.0.0.AND.CTH.GE.0.0) THETA=THETA 865
45     IF(          .2.0H.LE.0.0) THETA=PI-THETA 866
46     IF(STH.LT.0.0.AND.CTH.GE.0.0) THETA=TWOPI+THETA 867
47     A=R/(2.*R*V**2/(MJ/C**3)) 868
48     N= SQR((R**2+C**2)/A**1.5) 869

```

```

RN=N          877
FACTOR = 1.-R/A 878
ECCENT = SQRT(FACTOR*FACTOR + RV*RV/C**3/(A*MU)) 879
DOMEGA=-TWOPI*.001524*(20902900./C/1)**2*COS(IOTA) 880
C / (1.0 - ECCENT**2)**2 881
TORBIT=T*WORI/N 882
OMEGOT=DOMEGA/TORBIT 883
OMGDTD = OMEGOT*RD 884
IOTAD = IOTA*RD 885
RNDEG = RN*RD 886
DENOM=1./(A*A*RV) 887
OMEGAD = OMEGA*RD 888
THETAD = THETA*RD 889
WRITE(LOUTP3T,900) ISEG,SEC,THETAD,OMEGAD,IOTAD,OMGDTD,R,V,RJ,
C RNDEG,TORBIT,ECCENT 891
900 FORMAT(3K,8HSEGMENT ,I2,16X,8HTIME ,E15.9,3X,8HTHETA0 ,E15.9,
1      3X,8HOMEGA ,E15.9,/,3X,8HT)TA ,E15.9,3X,8HOMEGLT ,
2      E15.9,3X,8HRADIUS ,E15.9,3X,8HVELOC ,E15.9,/,3X,
3      8HR DOT V ,E15.9,3X,8HMN MOTV ,E15.9,2X,8HPERIOD ,E15.9,
4      3X,8HECCEN ,E15.9/) 896
RETURN 897
END 898

```

```
      SUBROUTINE DFS2(C1,C2,C3,NOD,IRD)
      **** PRINTS NU,PHI,PSI ARRAYS IN COLUMN FORM
      **** DIMENSION C1(16,3),C2(16,3),C3(16,3)
      PRINT 1000
1000 FORMAT(16X2HNU,27X3HPHI,26X3HPSI/)
      DO 1 I=1,NOD
      WRITE (6,900) T,NOD
900 FORMAT(6H0CJRV,E,I2,34 OF,I2)
      DO 2 K=1,IRD
      WRITE (6,1001) C1(<,I),C2(K,I),C3(K,I)
      2 CONTINUE
      1 CONTINUE
      RETURN
1001 FORMAT(5XE19.8,10XE19.8,10XE19.8)
      END
```

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```

      SUBROUTINE NWTN(TNR,KABORT), RETURNS(N)
917
C      REAL TOTA,MU
918
C      COMMON/DJSTALL/PI,TWOPi,R0,DP,SI,CI,I,MIT
919
C      COMMON/DNNWTN/X0,Y0,Z0,X0Z,Y0Z,Z0Z,DENOM,FACTOR,RV,RN,A,IOTA,HXY,
920
C      OMEGAZ,OMEGET,R0
921
C      COMMON/OUTDJT/ X,Y,Z,DX,DY,DZ,R,THETA
922
C      COMMON/OUTNWT/EPSEN,ITERRN
923
C      COMMON/OMIO/LINPUT,LOUTPUT
924
C
925      I = 1
926
1  ST = SIN(THETA)
927
2  CT = COS(THETA)
928
3  F = THETA - FACTOR*ST + RV*(1. - CT)/DENOM - RN*TNR
929
4  FP = 1. - FACTOR*CT + RV*ST/DENOM
930
5  IF( ABS(F) = EPSEN) 5, 5, 2
931
6  IF(I = ITERRN) 3,4,4
932
7  THETA = THETA - F/FP
933
8  I = I + 1
934
9  GO TO 1
935
F  CONTINUE
936
10 F=1.0+AF*(CT-1.0)/RC
937
11 G=(ST+RN*TNR-THETA)/RN
938
12 X = F*X0+G*X0Z
939
13 Y = F*Y0+G*Y0Z
940
14 Z = F*Z0+G*Z0Z
941
15 R = SQRT(X*X + Y*Y + Z*Z)
942
16 FD = -A*A*RN*ST/(R*RC)
943
17 GD = 1.0+AF*(CT - 1.0)/R
944
18 DX = FD*X0 + GD*X0Z
945
19 DY = FD*Y0 + GD*Y0Z
946
20 DZ = FD*Z0 + GD*Z0Z
947
21 HX = Y*Z - DY*Z
948
22 HY = Z*DX - DZ*X
949
23 STH = Z/(R*ST)
950
24 CTH = (Y*HX - X*HY)/(R*HXY)
951
25 THETA= ASIN(STH)
952
26
C      IF(STH.GE.0.0.AND.CTH.GE.0.0) THETA=THETA
953
C      IF(          CTH.LE.0.0) THETA=PT-THETA
954
C      IF(STH.LT.0.0.AND.CTH.GE.0.0) THETA=TWOPI+THETA
955
C
27 KABORT = 0
956
28 RETURN
957
4  WRITE(L01TPJT,100) F
958
100 FORMAT(43H NEWTON-RAPHSON DOES NOT CONVERGE. VALUE OF F IS,E15.8)
959
KABORT = 1
960
RETURN N
961
END
962
963
964
965
966

```

```

SUBROUTINE DATU(L)                                967
C COMPUTES      SECONDS AND MICRO-SECONDS SINCE 1969  968
C DIMENSION L(8)                                  969
C INPUT                                         970
C L(1) YEAR                                     971
C L(2) DAY                                       972
C L(3) HOUR                                     973
C L(4) MINUTE                                    974
C L(5) SECONDS                                 975
C L(6) MICRO-SECONDS                           976
C OUTPUT                                         977
C L(7) SECONDS                                 978
C L(8) MICRO-SECONDS                           979
C NYEAR = MOD(L(1),100)                         980
C L(8) = L(6)                                     981
C L(7) = L(5) + 60*(L(4) + 60*(L(3) + 24*(L(2) + (NYEAR - 69)/4 - 1
C + 365*(NYEAR - 70)))                          982
C RETURN                                         983
C END                                            984

```

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```

SUBROUTINE TJOA(L) 994
C 995
C COMPUTES FROM SECONDS AND MICRO-SECONDS SINCE 1969 996
C 997
C DIMENSION L(8) 998
C 999
C OUTPUT 1000
C 1001
C L(1) YEAR 1002
C L(2) DAY 1003
C L(3) HOUR 1004
C L(4) MINUTE 1005
C L(5) SECONDS 1006
C L(6) MICRO-SECONDS 1007
C 1008
C INPUT 1009
C 1010
C L(7) SECONDS 1011
C L(8) MICRO-SECONDS 1012
C 1013
C NDAY = L(7)/86400 1014
C NYEAR = NDAY/365 1015
C L(1) = NYEAR + 1970 1016
C L(2) = NDAY - NYEAR*365 - (NYEAR + 1)/4 + 1 1017
C IF(L(2),GE, 1) GO TO 5 1018
C L(1) = L(1) - 1 1019
C L(2) = 366 1020
C CONTINUE 1021
C JT = L(7) - NDAY*86400 1022
C L(3) = JT/3600 1023
C JT = JT - L(3)*3600 1024
C L(4) = JT/60 1025
C JT = JT - L(4)*60 1026
C L(5) = JT 1027
C L(6) = L(8) 1028
C RETURN 1029
C END 1030

```

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```
SUBROUTINE FIT(OUT,TR,CO,T0,T)
1031
INTEGER HALF
1032
DIMENSION CO(16)
1033
COMMON/OUTALL/PI,TWOPi,RD,DR,SI,Ci,C,MU
1034
HALF = ID/2
1035
OUT = CO(1) + CO(2)*T + CO(3)*T**2 + CO(4)*T**3
1036
DO 1 I = 3,HALF
1037
X = (I - 2)*TWOPiTT/TR
1038
K = ?*I - 1
1039
OUT = OUT + CO(K)* COS(X) + CO(K+1)* SIN(X)
1040
1 CONTINUE
1041
RETURN
1042
END
1043
```

APP-B- 2 - 43

```

SUBROUTINE LAMDEL(XP,YP,ZP,LV,IECI) 1044
C ***** 1045
C ***** 1046
C ***** 1047
C GIVEN PHIO, PSIO, NU, ETA, ALPHA, BETA, THETA, IOTA, AND 1048
C OMEGA, THIS SUBROUTINE COMPUTES THE RIGHT ASCENSION 1049
C AND DECLINATION OF THE EXPERIMENTERS SENSOR IN 1050
C ECI AND/OR LOCAL VERTICAL COORDINATES 1051
C ALSO ALLOWS FOR OUTPUT OF DIRECTION COSINES IN 1052
C LOCAL VERTICAL AND/OR ECI COORDINATES 1053
C 1054
C ***** 1055
C 1056
C 1057
C REAL IOTA,MU,NUE 1058
COMMON/DJTALL/PI,TWOP,RO,DR,SI,CI,J,M$ 1059
COMMON/DOUTD/_SP,CP,SS,CS,ST,CT,PNU,OMEGA,PHIO,PSIO,PHIM,PSIM,J 1060
COMMON/DLOUT/RLLV(16),DELTIV(16),RLECI(16),DLTECI(16), 1061
* ALFLVX(16),ALFLVY(16),ALFLVZ(16), 1062
* ALPHEX(16),ALPHEY(16),ALPHEZ(16) 1063
C 1064
C 1065
C 1066
C COMPUTE THE PROJECTION OF A UNIT VECTOR ALIGNED WITH THE 1067
C SENSOR ONTO THE X, Y, AND Z AXES IN THE LOCAL VERTICAL 1068
C COORDINATE SYSTEM. 1069
COMMON /DOUTD/ X,Y,Z,DX,DY,DZ,R,THETA 1070
CO = COS(OMEGA) 1071
SO = SIN(OMEGA) 1072
XEO = CT*(CI*(CO*Y-X*SO)+ST*Z)-ST*(CO*X+SO*Y) 1073
YEO = SI*(CO*Y-X*SO)-CI*Z 1074
ZEO = -ST*(CI*(CO*Y-X*SO)+ST*Z)-CT*(CO*X+SO*Y) 1075
XEP = -(XEO*CS+SS*(YEO*CP+ZEO*SP)) 1076
ZEP = YEO*SP - ZEO*CP 1077
NUE = ATAN(XEP/ZEP) 1078
IF(ZEP) 1,2,2 1079
1 NUE = NUE + PI 1080
GO TO 4 1081
2 IF(XEP) 3,4,4 1082
3 NUF = NUE+ TWOP 1083
4 CONTINUE 1084
CN = COS(RNU-NUF) 1085
SN = SIN(RNU-NUF) 1086
X0 = XP*CS*CN - YP*SS - ZP*CS*SN 1087
Y0 = XP*(CP*SS*CN-SP*SN) + YP*CP*CS - ZP*(CP*SS*SN+SP*CN) 1088
Z0 = XP*(SP*SS*CN + CP*SN) + YP*SP*CS + ZP*(CP*CN - SP*SS*SN) 1089
1 IF(LV) 50,51,5 1090
5 CONTINUE 1091
1092
1093
1094

```

```

C      LOCAL VERTICAL ATTITUDE IS REQUIRED.          1095
C      FIND THE RIGHT ASCENSION *LAMDA*, AND DECLINATION *DELTA*. 1097
C      DELT_V(J) = ASIN(-Z0)                         1097
C      RLLV(J) = ATAN(Y0/X0)                         1098
C      QUADRANT LOGIC                               1099
C      IF(X0) 13, 25, 25                           1100
10 RLLV(J) = RLLV(J) + PI                         1101
C      GO TO 40                                     1102
2F IF(Y0) 30, 40, 40                           1103
3C RLLV(J) = RLLV(J) + TWOPI                      1104
4C CONTINUE                                     1105
C                                         1106
C      FIND THE DIRECTION COSINES IN LOCAL-VERTICAL COORDINATES 1108
C
C      ALFL/X(J) = X0                             1109
C      ALFL/Y(J) = Y0                             1110
C      ALFL/Z(J) = Z0                             1111
C                                         1112
C      CHECK TO SEE IF ECI ATTITUDE IS REQUIRED. 1113
C                                         1114
C      IF(IECI) 100, 100, 50                      1115
5C CONTINUE                                     1116
C      ECI ATTITUDE IS REQUIRED.                  1117
C      COMPUTE THE PROJECTION OF A UNIT VERTOR ALIGNED WITH THE
C      SENSOR ONTO THE X, Y, Z, AXES IN THE ECT ( EARTH-CENTERED
C      SENSOR ONTO THE X, Y, AND Z AXES IN THE EARTH-CENTERED-INERTIAL
C      (ECI) COORDINATE SYSTEM.                   1121
C                                         1122
C      XF = -X0*(S0*CI*CT + CO*ST) - Y0*S0*SI + Z0*(S0*CI*ST - CO*CT)
C      YE = X0*(CO*CI*CT - S0*ST) + Y0*CO*ST - Z0*(CO*CI*ST + S0*CT)
C      ZF = X0*SI*CT - Y0*CI - Z0*SI*ST           1125
C                                         1126
C      FIND THE DIRECTION COSINES IN ECI COORDINATES 1127
C      ALPHFX(J) = XF                            1128
C      ALPHFY(J) = YE                            1129
C      ALPHFZ(J) = ZE                            1130
C                                         1131
C      FIND THE RIGHT ASCENSION (LAMDA) AND DECLINATION (DELTA)
C      DLTECI(J) = ASIN(-ZE)                     1133
C      RLECI(J) = ATAN(YE/XE)                    1134
C      QUADRANT LOGIC                           1135
C      IF(XE) 60, 70, 70                         1136
6C RLECI(J) = RLECI(J) + PI                     1137
C      GO TO 100                                  1138
7C IF(YE) 80, 100, 100                         1139
8C RLECI(J) = RLECI(J) + TWOPI                 1140
10C CONTINUE                                    1141
C      RETURN                                     1142
C      END                                         1143

```

```

      SUBROUTINE ORMAG(NUNIT, STTIME, ENDYM, DELTAT, NWDS, NUMWPD,
1      ARRAY, IERR)                                              1145
C
      DIMENSION EPH(50,3), ARRAY(1), NUMWR(1), DATA(50), X(3), Y(3),
1      NWDEG(6)                                                 1146
      DATA ISTREP1/0/, IFIRST/0/                                1148
      DATA(NWDEG(I)), T = 1,6)/20, 29, 34, 37, 38,40/          1150
      DATA IFLAG/0/                                             1151
C
      IND = 0                                                    1152
      IERR = 0                                                    1153
      IF(IFIRST .EQ. 1) GO TO 140                               1154
C
      READ HEADER RECORD                                         1156
      30 READ(NUNIT) IWD, JGP, (DATA(I), I = 1, IND)           1158
      IF(EOF(NUNIT)) 400, 100                                    1159
      100 IF(IFIRST .EQ. 1) GO TO 140                           1160
      TINC = DATA(12)                                           1161
      START = DATA(10)                                           1162
      STOP = DATA(11)                                           1163
C
      CHECK IF TIME WITHIN RANGE OF HEADER RECORD TIME          1164
      120 IF(STTIME .LT. START) GO TO 380                      1165
      IF(STTIME .GT. STOP) GO TO 380                           1166
      IF(IFIRST .EQ. 1) GO TO 140                           1167
      IFIRST = 1                                                1168
      GO TO 90                                                 1169
C
      140 IF(ISTREPH .EQ. 1) GO TO 200                         1170
      IF(STTIME .LT. DATA(8)) GO TO 160                       1171
      ISET = 1                                                   1172
      DO 150 K = 1, IWD                                         1173
      150 EPH(K,1) = DATA(K)                                     1174
      GO TO 90                                                 1175
      160 IF(ISET .EQ. 1) GO TO 165                           1176
      162 BACKSPACE NUNIT                                      1177
      BACKSPACE NUNIT                                         1178
      GO TO 90                                                 1179
      165 DO 170 K = 1, IWD                                     1180
      170 EPH(K,2) = DATA(K)                                     1181
      READ(NUNIT) IWD, JGP, (EPH(I,3), I = 1, IWD)            1182
      ISET = 0                                                 1183
C
      HAVE STARTING POSITION                                    1184
      ISTREPH = 1                                              1185
      GO TO 275                                               1186
C
      200 IF(STTIME .LT. EPH(8,2)) GO TO 220                 1187
      IF(IFLAG.EQ.1.AND.STTIME.GT.EPH(8,3)) GO TO 410         1188
      IF(IFLAG.EQ.1.AND.STTIME.LE.EPH(8,3)) GO TO 275         1189
      READ(NUNIT) IWD, JGP, (DATA(I), I=1,IWD)                1190
C
      220 IF(IFLAG.EQ.1.AND.STTIME.GT.EPH(8,3)) GO TO 410         1191
      IF(IFLAG.EQ.1.AND.STTIME.LE.EPH(8,3)) GO TO 275         1192
      READ(NUNIT) IWD, JGP, (DATA(I), I=1,IWD)                1193
C
      275 IF(IFLAG.EQ.1.AND.STTIME.GT.EPH(8,3)) GO TO 410         1194
      IF(IFLAG.EQ.1.AND.STTIME.LE.EPH(8,3)) GO TO 275         1195
      READ(NUNIT) IWD, JGP, (DATA(I), I=1,IWD)

```

```

      IF(FOF(NJUNIT)) 240,250          1195
250  DO 210 K=1,2                  1196
      DO 210 I = 1, IWD               1197
210  EPH(I,K) = EPH(I,<+1)          1198
      DO 260 I=1,IWD                1199
260  EPH(' ,3)=DATA(I)            1200
      GO TO 200                      1201
240  IFLAG=1                      1202
      GO TO 275                      1203
220  IF(STTIME .GE. EPH(8,1)) GO TO 275  1204
      BACKSPACE NJUNIT              1205
      BACKSPACE NJUNIT              1206
      IFLAG=0                        1207
      ISTRPH = 0                     1208
      GO TO 162                      1209
C
C       INTERPOLATE ON NWDS OF DATA    1210
275  DO 350 K = 1, NWDS            1211
      NM = NUMWRD(K)                1212
      DO 310 I = 1, 3                1213
      Y(I) = EPH(NM,I)              1214
280  X(I) = FPH(8,I)                1215
      DO 310 M = 1, 6                1216
      IF(NM .NE. NWDEG(M)) GO TO 310 1217
      CALL LAGREG(X, Y, STTIME, YY)   1218
      GO TO 325                      1219
310  CONTINUE                      1220
      CALL LAGRAGE(X, Y, STTIME, YY)  1221
325  IND  IND + 1                  1222
      ARRAY{IND} = YY                1223
350  CONTINUE                      1224
C
      STTIME = STTIME + DELTAT        1225
      IF(STTIME .GE. ENDYTM) RETURN   1226
      GO TO 120                      1227
380  IERR = 1                      1228
      RETURN                         1229
400  IEPR = 2                      1230
      RETURN                         1231
410  IERR=3                        1232
      RETURN                         1233
      END                            1234
                                      1235
                                      1236

```

```

SUBROUTINE LAGDEG(X, Y, XX, YY)          1237
DIMENSION X(3), Y(3)                      1238
C
I=1                                         1239
J=2                                         1240
K=3                                         1241
IF(ABS(Y(K)-Y(I)) = 300.) 1, 2, 2       1242
? IF(Y(K) = Y(I) .GT. 0.0) GO TO 3       1243
C     GOING FROM 0 TO 360                 1244
Y(K) = Y(K) + 360.                         1245
GO TO 8                                     1246
C     GOING FROM 360 TO 0                 1247
3 Y(I) = Y(I) + 360.                         1248
8 IF(ABS(Y(J)-Y(I)) = 300.) 1, 4, 4       1249
4 Y(J) = Y(J) + 360.                         1250
1 XN0 = XX - X(I)                           1251
XN1 = XX - X(J)                           1252
XN2 = XX - X(K)                           1253
X01 = X(I) - X(J)                           1254
X02 = X(I) - X(K)                           1255
X12 = X(J) - X(K)                           1256
YY = XN1/X01*XN2/X12*Y(I) - XN0/X01*XN2/X12*Y(J) + XN0/X02*XN1/X12
1   * Y(K)                                 1257
IF(YY = 360.) 5, 6, 6                     1258
5 YY = YY - 360.                           1259
6 RETURN                                    1260
END                                         1261
                                         1262
                                         1263

```

```

      SUBROUTINE LAGRAG(X, Y, XX, YY)          1264
C      IF DIMENSION OF X IS N, THEN N-2 IS LIMIT ON NUMBER OF POINTS
C      THAT CAN BE INTERPOLATED BETWEEN USING THIS ROUTINE    1266
C      XC LIES BETWEEN I AND I+1                            1267
C      DIMENSION X(3), Y(3)                                1268
C
C      I=1                                              1269
C      J=2                                              1270
C      K=3                                              1271
C      XN0 = XX-X(I)                                     1272
C      XN1 = XX-X(J)                                     1273
C      XN2 = XX-X(K)                                     1274
C      X01 = X(I)-X(J)                                   1275
C      X02 = X(I)-X(K)                                   1276
C      X12 = X(J)-X(K)                                   1277
C      YY = XN1/X01*XN2/X02*Y(I) - XN0/X01*XN2/X12*Y(J) + XN0/X02*XN1/X12
1      * Y(K)                                         1278
      RETURN
      END

```

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```

SUBROUTINE S2UPB(KDAT,JDAT,KANN,IANN)          1283
*****                                         1284
*****                                         1285
C 1975   SUBPROGRAM. E. HOLEMAN. LAST ALTERATION 19 NOV 75 1286
C 1975   S3-2 DATA REDUCTION SYSTEM. CREATED 18 NOV 75 1287
*****                                         1288
*****                                         1289
C UNPACK FORMAT 3 DATA FOR 1 SECOND INTERVAL AND 1290
C UNPACK HOUSEKEEPING RECORD (16 SEC INTERVAL) AT ENTRY 1291
C S2HKB.                                         1292
*****                                         1293
*****                                         1294
DIMENSION KDAT(27),JDAT(65),IBIT(65),KANN(17),IANN(100) 1295
DATA IBIT /50,4*(24,18,18),50,16*48,10*24,25*9/        1296
IWD=1                                         1297
IBT1=60                                         1298
DO 10 IT=1,65                                         1299
NBT=IBIT(IT)
IBT2=IBT1-NBT+1                                         1300
IF(IBT2.LE.0) GO TO 20                                1301
JDAT(IT)=LBYTX(IBT2,NBT,KDAT(IWD))                  1302
GO TO 30                                         1303
10 CONTINUE                                         1304
JDAT(IT)=LBYTX(1,IBT1,KDAT(IWD))                  1305
NBT=NBT-IBT1                                         1306
IBT2=60-NBT+1                                         1307
IWD=IWD+1                                         1308
JDAT(IT)=SHFTX(JDAT(IT),NBT).OR.LBYTX(IBT2,NBT,KDAT(IWD)) 1309
CONTINUE                                         1310
IBT1=IBT2-1                                         1311
IF(IBT1.GT.0) GO TO 10                                1312
IBT1=60                                         1313
IWD=IWD+1                                         1314
10 CONTINUE                                         1315
RETURN                                         1316
ENTRY S24KB                                         1317
IJ=0                                         1318
DO 40 II=1,17                                         1319
DO 40 JJ=1,5                                         1320
IJ=IJ+1                                         1321
IF(IJ.GT.10) GO TO 40                                1322
IBT=55-9*JJ                                         1323
IANN(IJ)=LBYTX(IBT,9,KANN(II))                  1324
40 CONTINUE                                         1325
RETURN                                         1326
END                                         1327
                                         1328

```

SUBROUTINE S2PK2(KDAT, IDAT, NTO)	1329
DIMENSION KDAT(100), IDAT(NTO)	1330
MID=2	1331
GO TO 10	1332
ENTRY S2PK3	1333
MID=3	1334
GO TO 10	1335
ENTRY S2PK4	1336
MID=4	1337
GO TO 10	1338
ENTRY S2PK5	1339
MID=5	1340
10 CONTINUE	1341
IID=50/MID	1342
II1=1	1343
DO 20 II=1,NID,MID	1344
II1=II1+1	1345
JJ1=F1	1346
JJ3=II+MID-1	1347
DO 20 JJ=II,JJ3	1348
JJ1=JJ1-IID	1349
IF(IDAT(JJ).LT.0) IDAT(JJ)=IDAT(JJ)+3600	1350
KDAT(II1)=ISBYTK(JJ1,IID,KDAT(II1),IDAT(JJ))	1351
20 CONTINUE	1352
RETURN	1353
END	1354

```

SUBROUTINE GEOGA(TT) 1355
C***** 1356
C***** 1357
C 1972 SUBPROGRAM. E. HOLEMAN. LAST ALTERED 2 SEP 76. 1358
C FROM SUBROUTINE GFOG 16 JAN 76. 1359
C***** 1360
C CALCULATES GEOCENTRIC AND GEOMAGNETIC LATITUDE AND 1361
C LONGITUDE AS A FUNCTION OF TIME FOR A SATELLITE ORBIT 1362
C DESCRIBED BY THE COORDINATES OMEGA,THETA,PIOTA, R. 1363
C***** 1364
C ALL PARAMETERS BUT TIME ARE PASSED THROUGH COMMON 1365
C BLOCK TOGEOG. 1366
C***** 1367
C***** 1368
C***** 1369
COMMON /TOGEOG/ OMEGA,THETA,PIOTA,R,XLT,XLG,ALT,XLT4,XLGM 1370
DATA ICALL /0/ 1371
ICALL=ICALL+1 1372
IF(ICALL.GT.1) GO TO 10 1373
PI=3.141592654 1374
DR=PT/180. 1375
RD=1./DR 1376
TWOPI=2.*PI 1377
PI32=270.*DR 1378
PI2=90.*DR 1379
COLAT=11.435*DR 1380
WLON=69.761*DR 1381
STO=SIN(COLAT) 1382
CTO=COS(COLAT) 1383
10 CONTINUE 1384
RIOTR=RIOTA*DR 1385
THETR=THETA*DR 1386
OMEGR=OMEGA*DR 1387
OMEGTH=TT*(-.00417807462202) 1388
OMEGTH=OMEGTH*DR 1389
XLATR=ASIN(SIN(THETR)*SIN(RIOTR)) 1390
ARG=SIN(THETR)*COS(RIOTR)/COS(XLATR) 1391
IF(ARG.GE.1.) ARG=1.-1.E-10 1392
IF(ARG.LE.-1.) ARG=-1.+1.E-10 1393
OMEGOB=ASIN(ARG) 1394
IF(PT2.LT.THETR.AND.THETR.LT.PI32) OMEGOB=PI-OMEGOB 1395
IF(-PI32.LT.THETR.AND.THETR.LT.-PI2) OMEGOB=PI-OMEGOB 1396
XLGMZ=-99.75557*? 1397
XLGR=OMEGR+OMEGOB+OMEGTH+XLGMZ 1398
XLT=XLATR*RD 1399
XLG=XLGR*RD 1400
IXLG=XLG 1401
MXLG=(IXLG/360)*360 1402
XLG=XLG-FLOAT(MXLG) 1403
IF(XLG.LT.0.) XLG=XLG+360. 1404
ALT=R*1.85325-6371.2 1405

```

XLGR=XLGR*2	1406
CTG=SIN(XLATR)	1407
STG=COS(XLATR)	1408
CTD=CTD*CTG+STD*STG*COS(XLGR+WLN)	1409
STD=SQRT(1.-CTD*CTD)	1410
XLTM=ATAN(CTD/STD)*PD	1411
CLD=(CTD*(T)-CTG)/(STD*STD)	1412
SLGLD=SIN(XLGR+WLN)	1413
SLD=STG*SLG_0/STD	1414
XLGM=180.-ATAN2(SLR,-CLD)*PD	1415
RETURN	1416
END	1417

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```

        PROGRAM S2BLAF(CFILE,DFILE,LFILE=0,YFILE=64,
+OUTPUT=64,TAPE1=CFILE,TAPE3=DFILE,TAPE2=LFILE,
+TAPE4=YFILE,TAPE5=OUTPUT)
***** ****
C 1975 PROGRAM. E. HOLEMAN. LAST ALTERATION 6 JUL 75
C FROM OMRAE 30 DEC 75.
*****
C PROGRAM TO ADD B AND L INFORMATION FOR DATA FILE FROM
C S2OMA
*****
C 563008 DM STORAGE REQUESTED FOR LOADING.
*****
C ****
C ***** DIMENSION EL(21),BE(21),SL(21),KDAT(27,18),INA(39),
+FHED(30),THED(30),RT(10),IRT(10),LTD(8),JDAT(65),
+LOAT(4,8),ASPK(5),ATT(2,16),BATT(2,16),LBL(7),
+XM(3,3),YM(3,3),
+TANN(100)
EQUIVALENCE(FHED,THED)
RD=57.2957735128
DR=1./RD
BDEL=11.2*DR
COEL=COS(BDEL)
SOEL=SIN(BDEL)
POEL=291.*DR
REWIND1
REWIND3
REWIND8
IDTT=DATE(ADAT)
T0=SECOND(TTT)
CALL COEG(1976.,EL,BE,SL)
CALL SLITE()
50 CONTINUE
ICT3=0
ICT4=0
T1=SECOND(TTT)
READ(1) IWC,IGC,(FHED(I),I=1,IWC)
IF(EOF(1)) 110,50
50 CONTINUE
MNFM0=FHED(IWC)
FHED(IWC)=5L0FILE
ENCODE(30,4001,LBL) (IHED(I),I=1,31,THED(6))
4001 FORMAT(R4,R5,2X,A10,1X,AB)
GMT1=FLOAT(IHED(18))/1000.
TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.
GMTZ=GMT1-FLOAT(IHED(17))*TRAT
FHED(21)=96.288
XIOTA=FHED(21)

```

```

      WRITE(3) IWC,IGC,(FHED(I),I=1,IWC)          51
      JD=IHED(26)                                52
      CALL TDAT3(LTIM,TM,MON,FHED(27),JD,113)    53
10   CONTINUE                                     54
*** */
C READ MASTER FRAME TNPUT                      55
*** */
      READ(1) IWC,IGC,((KDAT(I,J),I=1,IWC),J=1,IGC) 56
      IEOF=EOF(1)                                57
      IF(IEOF.NE.0) GO TO 100                     58
      ISA=0                                       59
      ISB=0                                       60
      ISC=0                                       61
      JGC=IGC-1                                  62
      • CALL S2HKB((KDAT(1,1),JDAT,KDAT(1,JG)),TANN) 63
      DO 130 IT=1,6                               64
      ISA=ISA+IANN(IT)                           65
130  CONTINUE                                     66
      DO 240 IT=7,16                             67
      TSB=TSB+IANN(IT)                           68
240  CONTINUE                                     69
      DO 250 II=17,36                            70
      TSC=TSC+IANN(II)                           71
250  CONTINUE                                     72
      IF((ISA.LT.300.AND.ISB.LT.1150).AND.ISC.LT.2000) GO TO 10 73
90   CONTINUE                                     74
      IF(KDAT(IWC,IGC).NE.10HATT RECORD) GO TO 10 75
      ICT3=ICT3+1                                76
      CALL S2UP3((KDAT(1,IGC),IDA,13))           77
      ALT=TDA(1)                                 78
      XLT=FLOAT(IDA(2))/100.                      79
      XLG=FLOAT(IDA(3))/100.                      80
      THET=FLOAT(IDA(4))/100.                      81
      IF(XLT.GT.90.) XLT=XLT-360.                 82
      OMEG=FLOAT(IDA(5))/100.                      83
      XLTM=FLOAT(IDA(6))/100.                      84
      XLGM=FLOAT(IDA(39))/100.                     85
      IF(XLT.MT.30.) XLTM=XLTM-360.                86
      RKM=ALT*6371.2                             87
      PNM=RKM/1.85325                           88
      CALL INVAR(XLT,XLG,ALT,.0001,BA,FL,BR,BT,BP) 89
      CALL INTER(EL,SL,21,0,1,FL,SLX)              90
      CALL INTER(EL,BF,21,0,1,FL,BFX)              91
      HMN=(BA-BFX)/SLX                           92
      IF(HMN.LE.0.) HMN=0.                         93
      IF(HMN.GT.ALT) HMN=ALT                      94
      IDA(1)=BA*10000.+5                         95
      IF(FL.LT.0..OR.FL.GT.10.) FL=10.            96
      IDA(2)=FL*10000.+5                         97
      IDA(3)=HMN+.5                            98
      IDA(4)=HMN+.5                            99
      IDA(5)=HMN+.5                            100
      IDA(6)=HMN+.5                            101
      IDA(7)=HMN+.5                            102
      IDA(8)=HMN+.5                            103
      IDA(9)=HMN+.5                            104
      IDA(10)=HMN+.5                           105
      IDA(11)=HMN+.5                           106
      IDA(12)=HMN+.5                           107
      IDA(13)=HMN+.5                           108
      IDA(14)=HMN+.5                           109
      IDA(15)=HMN+.5                           110
      IDA(16)=HMN+.5                           111
*** */

```

C AND GEOMETRY	112
*****	113
II2=6	114
II1=IGC-2	115
DO 80 II=1,II1	116
DO 80 JJ=1,2	117
II2=II2+1	118
ATT(JJ,II)=FLOAT(I7A(II2))/100.	119
80 CONTINUE	120
120 CONTINUE	121
SGAM=COS(XIOTA*DR)/COS(XLT*DR)	122
TGAM=ABS(SGAM)	123
IF(TGAM.E.1.) GO TO 140	124
WRITE(8,2006) ICT3,XIOTA,XLT	125
2006 FORMAT(1X,%_AT PROBLEM AT*,I5,2F10.1)	126
GO TO 10	127
140 CONTINUE	128
GAM=ASIN(SGAM)*RD	129
IF(THET.GT.90..AND.THET.LT.270.) GAM=180.-GAM	130
DP=ATAN2(BP,BT)*RD	131
XIB=ASIN(BR/BA)*RD	132
RT(1)=-(90.+GAM+DB)	133
IRT(1)=3	134
RT(2)=90.+XIB	135
IRT(2)=1	136
CALL EULER(THA,PHA,YM,RT,IRT,2,0,THB,PHB,XM)	137
CALL EULER(90.,0.,XM,RT,IRT,0,1,ANGT,ANGP,YM)	138
IF(ANGT.LT.0.) ANGT=ANGT+360.	139
IF(ANGP.LT.0.) ANGP=ANGP+360.	140
IDA(4)=100.*ANGT+.5	141
IDA(5)=100.*ANGP+.5	142
IDA(6)=0.	143
DO 40 II=1,II1	144
PHA=ATT(1,II)	145
THA=90.+ATT(2,II)	146
CALL EULER(THA,PHA,XM,RT,IRT,0,1,BATT(1,II),BATT(2,II),YM)	
40 CONTINUE	148
II2=5	149
DO 150 II=1,II1	150
DO 150 JJ=1,2	151
II2=II2+1	152
IF(BATT(JJ,II).LT.0.) BATT(JJ,II)=BATT(JJ,II)+360.	153
IDA(TI2)=100.*BATT(JJ,II)+.5	154
150 CONTINUE	155
CALL S2PK3(<DAT(14,IGC),IDA,39)	156
KDAT(IWC,IGC)=10H MAG RECORD	157
*****	158
C WRITE MASTER FRAME OUTPUT	159
*****	160
WRITE(3) IWC,IGC,((KDAT(I,J),I=1,IW),J=1,IGC)	161
ICT4=ICT4+1	162

IF(ISA.LT.800.AND.ISB.LT.1150) GO TO 10	163
IF(MOD(ICT3,4).NE.1) GO TO 10	164
HR=(GMTZ+FLOAT(KDAT(1,1))*TPAT)/360.	165
CALL TDATR(LTIM, TM, MON, HR, JN, 01B)	166
2001 FORMAT(111,4X,*S3-2 64 SECOND LISTING FROM MAGNETIC*)	167
+* FIELD PROGRAM.*F5X,*EPHEMERUS FOR *,F10.4,1X,A10.7X,	168
+* COMPUTER RUN OF *,A10	169
+/5X,*RT ASCENSION = *,F10.3,* INCLENATION = *,F10.3)	170
IF(ICT3.EQ.1) WRITE(8,2001) HR,MON,ADAT,MEG,XIOTA	171
IF(ICT3.EQ.1) WRITE(8,2013) LABL	172
2013 FORMAT(5X,*ORBIT ID = *,3A10/T25,*GEOCENTRIC*,	173
+T60,*GEMAGNETIC*/10X,*TIME*,T20,*LAT*,T30,*LONG*,T38,	174
+*ALT*,T43,*THETA*,T59,*LATM*,T68,*LONM*,T77,*R(KM)*,	175
+T89,*B*,T99,*L*,T107,*HMIN*)	176
WRITE(8,2014) LTIM(3),LTIM(4),LTIM(5),XLT,XLG,ALT,THET,	177
+XLTM,XLG4,RCM,BA,FL,AMN	178
2014 FORMAT(7X,I2,2I3,F.3,F10.3,F9.1,3F10.3,F10.1,F10.5,	179
+F10.4,F10.1)	180
GO TO 10	181
100 CONTINUE	182
WRITE(8,2002) ICT3,ICT4	183
2002 FORMAT(1X,I5,* MASTER FRAMES READ FROM CFILE*/	184
+1X,I5,* MASTER FRAMES WRITTEN ON DFILE*)	185
T2=SECOND(TTT)-T1	186
WRITE(8,2003) T2	187
2003 FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3)	188
ENDFILE3	189
GO TO 50	190
110 CONTINUE	191
T2=SECOND(TTT)-T0	192
WRITE(8,2005) T2	193
2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S2RLA IS*,F10.3)	194
END	195

```

SUBROUTINE EULER(TA,PA,X,ALP,IA,NA,IND,TB,PB,Y) 196
DIMENSION A(3),B(3),X(3,3),Y(3,3),A_(10),IA(10) 197
PT=3.141592653 198
RD=180./PI 199
DR=1./RD 200
IF(IND.NE.0) GO TO 10 201
DO 20 II=1,3 202
DO 30 JJ=1,3 203
X(II,JJ)=0. 204
50 CONTINUE 205
X(II,II)=1. 206
20 CONTINUE 207
10 CONTINUE 208
IF(IND.EQ.0) GO TO 11 209
TAR=TA*DR 210
PAR=PA*DR 211
11 CONTINUE 212
DO 40 II=1,3 213
DO 40 JJ=1,3 214
Y(II,JJ)=X(II,JJ) 215
40 CONTINUE 216
IF(NA.LT.1) GO TO 50 217
DO 60 II=1,NA 218
CALL TRANS(ALP(II),IA(II),Y) 219
50 CONTINUE 220
50 CONTINUE 221
IF(IND.EQ.0) GO TO 110 222
A(1)=SIN(TAR)*COS(PAR) 223
A(2)=SIN(TAR)*SEN(PAR) 224
A(3)=COS(TAR) 225
IF(IND.EQ.2) GO TO 70 226
DO 80 II=1,3 227
B(II)=0. 228
DO 80 JJ=1,3 229
B(II)=B(II)+A(JJ)*Y(JJ,II) 230
80 CONTINUE 231
GO TO 90 232
70 CONTINUE 233
DO 100 II=1,3 234
B(II)=0. 235
DO 100 JJ=1,3 236
B(II)=B(II)+Y(II,JJ)*A(JJ) 237
100 CONTINUE 238
90 CONTINUE 239
TB=ACOS(B(3))*RD 240
PB=ATAN2(B(2),B(1))*RD 241
110 CONTINUE 242
RETURN 243
END 244

```

SUBROUTINE TRANS(PHI,L,X)	245
DIMENSION X(3,3),ROT(3,3),Y(3,3)	246
PI=3.141592653	247
RD=180./PI	248
DR=1./RD	249
DO 10 II=1,3	250
DO 10 JJ=1,3	251
ROT(TI,JJ)=0.	252
10 CONTINUE	253
PHIR=-PHI+DR	254
GO TO (20,30,40) -	255
20 CONTINUE	256
ROT(1,1)=1.	257
ROT(2,2)=COS(PHIR)	258
ROT(2,3)=SIN(PHIR)	259
ROT(3,2)=-ROT(2,3)	260
ROT(3,3)=ROT(2,2)	261
GO TO 50	262
30 ROT(1,1)=COS(PHIR)	263
ROT(1,3)=-SIN(PHIR)	264
ROT(2,2)=1.0	265
ROT(3,1)=-ROT(1,3)	266
ROT(3,3)=ROT(1,1)	267
GO TO 50	268
40 CONTINUE	269
ROT(1,1)=COS(PHIR)	270
ROT(1,2)=SIN(PHIR)	271
ROT(2,1)=-ROT(1,2)	272
ROT(2,2)=ROT(1,1)	273
ROT(3,3)=1.	274
50 CONTINUE	275
DO 60 TI=1,3	276
DO 60 JJ=1,3	277
Y(TI,JJ)=0.	278
DO 60 KK=1,3	279
Y(TI,JJ)=Y(TI,JJ)+X(TI,KK)*ROT(KK,JJ)	280
60 CONTINUE	281
DO 70 II=1,3	282
DO 70 JJ=1,3	283
X(TI,JJ)=Y(TI,JJ)	284
70 CONTINUE	285
RETURN	286
END	287

```

      SUBROUTINE INVAR(FLAT,FLONG,ALT,ERR,BB,FL,PR,BT,BPI      288
C      REVISED DEC 1965                                         289
C      NOTE, ERROR IN L IS TYPICALLY LESS THAN 10.*FRR*L (PERCENT) 290
C      FLAT=LATITUDE IN DEGREES , FLONG=LONGITUDE IN DEGREES    291
C      ALT=ALTITUDE=DISTANCE FROM SURFACE OF EARTH IN KILOMETERS 292
C      DIMENSION V( 3, 3 ),B(200),ARC(200),VN(3),VP(3),BEG(200), 293
1  BEND(200),ECO(200),R1(3),R2(3),R3(3)                      294
      CALL SLITET(1,IFG1)                                         295
      RAD=57.2957795131                                         296
      IF(IFG1.EQ.1) GO TO 50                                     297
      V(1,2)=ALT/6371.2                                         298
      V(2,2)=(30.-FLAT)/RAD                                     299
      V(3,2)=FLONG/RAD                                         300
      ARC(1)=0.                                                 301
      ARC(2)=(1.0+V(1,2))*SQR( (ERR)*0.3                     302
      DCLT=1.5708-0.2007*COS ( V(3,2)+1.233)                  303
      IF(V(2,2)-DCLT)10,10,11                                    304
11     ARC(2)=-ARC(2)                                         305
10     CALL START (R1,R2,R3,B,ARC,      V)                      306
      DO 12 I=1,3                                              307
      VP(I)=V(I,2)                                             308
12     VN(I)=V(T,3)                                           309
      CALL LINES (R1,R2,R3,B,ARC,ERR,J,VP,INI                 310
      IF(J-200)16,17,17                                         311
17     FL=-1.0                                              312
      GO TO 18                                                 313
18     JUP=J                                                 314
      DO 40 J=1,JJP                                         315
      ARC(J)=ABS (ARC(J))                                     316
40     BLOG(J)=ALOG(B(J))                                    317
      JEP=JUP-1                                              318
      DO 21 J=2,JEP                                         319
      ASUM=ARC(J)+ARC(J+1)                                    320
      DX=BLOG(J-1)-BLOG(J)                                    321
      DN=ASUM*ARC(J)*ARC(J+1)                                322
      BCO=((BLOG(J-1)-BLOG(J+1))*ARC(J)**2-DX*ASUM**2)/DN   323
      CCO=(DX*ARC(J+1)-(BLOG(J)-BLOG(J+1))*ARC(J))/DN      324
      SA=.75*ARC(J)                                         325
      SC=SA+.25*ASUM                                         326
      DCO=BLOG(J-1)-CCO *SA*SC                               327
      ECO(J)=BCO +CCO *(SA+SC)                                328
      PEG(J)=EXP (DCO+ECO(J)*.5*ARC(J))                    329
21     EEND(J)=EXP (DCO+ECO(J)*.5*(ASUM+ARC(J)))          330
      BEG(JUP)=BEND(JEP)                                     331
      BEND(JUP)=B(JUP)                                       332
      ECO(JUP)=(2.0/ARC(JUP))*ALOG(BEND(JUP)/BEG(JUP))     333
      CALL INTEG (ARC,BEG,BEND,B,JEP,ECO,FLINT)              334
      CALL CARMEL (B(2),FLINT,FL)                            335
18     BB=B(2)                                              336
50     CONTINUE                                             337
      RL=ALT/6371.2+1.                                         338

```

THET=(90.-FLAT)/RAD	339
ST=ABS(SIN(THET))	340
PHI=FLONG/RAD	341
CALL NEWMAG(RL,ST,PHI,BR,RT,3P,BG,TIFT)	342
IF(IFG1,E0,1) CALL LCALL(FLAT,FLONG,ALT,FL)	343
IF(FL,GT,8000.) FL=-1.	344
BB=SQRT(BR*BR+RT*RT+3P*3P)	345
RETURN	346
END	347

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```

SUBROUTINE LCALL(XLT,XLG,XALT,XL)          348
  DIMENSION UJXL(145),UDXL(145),DUXL(145),DDXL(145),INDX(144),
+ XLAB(2)                                     350
  COMMON/INTERP/X1,F1,Z1,X2,Y2,Z2,O1,O2,O3,O4,U1,U2,J3,U4
  DATA ICALL/0/
  IF(ABS(XLT).GT.87.5) XL=6666.
  IF(ABS(XLT).GT.87.5) RETURN
  ICALL=ICALL+1
  IF(ICALL.NE.1) GO TO 10
  CALL OPENMS(2,INDX,144,0)                   351
  CALL READMS(2,XLAB,2,143)                   352
  Z1=XLAB(2)                                  353
  Z2=XLAB(1)                                  354
  GO TO 20                                    355
10   CONTINUE                                   356
  TEST=(XLT-DNLT)*(XLT-UPLT)
  IF(TEST.GT.0.) GO TO 20
20   CONTINUE                                   357
*** */
3  DETERMINE LONGITUDE INDEX               358
*** */
KLGL=XLG/2.5+1.                           359
KLGU=KLGL+1.                               360
DNLG=2.5*FLOAT(KLG-1)                      361
UPLG=DNLG+2.5                                362
TEST=(XLG-DNLG)*(XLG-UPLG)                 363
IF(TEST.GT.0) GO TO 100
IF(KLGU.GT.145) KLGU=145
X1=DNLG
X2=UPLG
U1=UJXL(KLG)
U2=UDXL(KLG)
U3=UJXL(KLG)
U4=UDXL(KLG)
D1=DDXL(KLG)
D2=DDXL(KLG)
D3=DUXL(KLG)
D4=DUXL(KLG)
CALL INTR3(XLG,XLT,XALT,XL)                364
RETURN
20   CONTINUE                                   365
*** */
3  NEW LATITUDES NEEDED                     366
*** */
IND=(XLT+87.5)/1.25+1.                      367
IF(MOD(IND,2).EQ.0) IND=IND-1                368
DNLT=FLOAT(IND-1)*1.25-87.5                  369
Y1=DNLT
CALL READMS(2,UDXL,145,IND)                  370
IND=FND+1
CALL READMS(2,DDXL,145,TND)                  371

```

IND=IND+1	399
UPLT=FLOAT(IND-1)*1.25-87.5	400
Y2=UPLT	401
CALL READMS(2,UJX_,145,IND)	402
IND=IND+1	403
CALL READMS(2,DJX_,145,IND)	404
TEST=(XLT-DNLT)*(KLT-UPLT)	405
IF(TEST.LE.0) GO TO 30	406
*****	407
C PROBLEMS IN LATITUDE LOGIC	408
*****	409
WRITE(6,2001) DNLT,XLT,UPLT,IND	410
2001 FORMAT(1X,*CHECK LATITUDES*,3F10.1,15)	411
GO TO 110	412
100 CONTINUE	413
*****	414
C PROBLEMS IN LONGITUDE LOGIC	415
*****	416
WRITE(6,2002) DNLG,XLG,UPLG,KLGL,KLG	417
2002 FORMAT(1X,*CHECK LONGITUDES*,3F10.1,2T5)	418
110 CONTINUE	419
CALL EXIT	420
END	421

```

SUBROUTINE INTR3(P1,P2,P3,F3)          422
COMMON/INTERP/X1,Y1,Z1,X2,Y2,Z2,D1,D2,D3,D4,U1,U2,U3,U4      423
IF(U1.LT.0..OR.U2.LT.0..OR.U3.LT.0..OR.U4.LT.0.) GO TO 10    424
IF(D1.LT.0..OR.D2.LT.0..OR.D3.LT.0..OR.D4.LT.0.) GO TO 10    425
RA=0.                                         426
IF(Z1.EQ.Z2) GO TO 20                     427
RA=(P3-Z1)/(Z2-Z1)                         428
CONTINUE                                     429
A1=D1+(U1-D1)*RA                          430
A2=D2+(U2-D2)*RA                          431
A3=D3+(U3-D3)*RA                          432
A4=D4+(U4-D4)*RA                          433
RB=0.                                         434
IF(Y2.EQ.Y1) GO TO 30                     435
RB=(P2-Y1)/(Y2-Y1)                         436
CONTINUE                                     437
B1=A1+(A4-A1)*RB                          438
B2=A2+(A3-A2)*RB                          439
RC=0.                                         440
IF(X2.EQ.X1) GO TO 40                     441
RC=(P1-X1)/(X2-X1)                         442
CONTINUE                                     443
FP=B1+(B2-B1)*RC                          444
GO TO 50                                     445
CONTINUE                                     446
FP=8888.                                     447
CONTINUE                                     448
RETURN                                       449
END                                         450

```

SUBROUTINE POSTL(JHEM,XLT,UALT,DALT)	451
NAMELIST/NAML/THEM,HHH,DLAT,XMLAT	452
NAMELIST/LNAM/XLAT,ALT,DLNG	453
REWIND2	454
REWIND3	455
READ(2,NAML)	456
UALT=HHH	457
READ(3,NAML)	458
DALT=HHH	459
IF(JHEM.EQ.1) GO TO 10	460
READ(2,NAML)	461
UALT=HHH	462
READ(3,NAML)	463
DALT=HHH	464
10 CONTINUE	465
IF(A'S(XLT).GT.(XMLAT-.1)) RETURN	466
TLAT=2.001*DLAT	467
20 CONTINUE	468
READ(2,LNAM)	469
READ(3,LNAM)	470
IF(A'S(XLT-XLAT).LT.TLAT) GO TO 30	471
GO TO 20	472
30 CONTINUE	473
PRINT 2001,XLT,XLAT,JHEM,UALT,DALT	474
2001 FORMAT(2X,*NEW QUADRANT CALLED. LAT=*,F8.2,* DATA SET=*, +F8.2/2X,*4E4ISPHRF=*,I4,2F10.1)	476
RETURN	477
END	478

	SUBROUTINE LINES (R1,R2,R3,B,ARC,ERR,J,VP,VN)	479
C	VERSION OF MAY 1965	480
	DIMENSION B(200),ARC(200),R1(3),R2(3),R3(3),VN(3),VP(3),RA(3)	
	CRE=0.25	482
	IF(FRR>0.15625)74,75,76	483
74	CRE=(ERR**0.333333333)	484
75	A3=ARC(3)	485
	AAE=AES(A3)	486
	SNA=A3/A13	487
	A1=ARC(1)	488
	A2=ARC(2)	489
	A06=A3*A3/6.0	490
	J=3	491
	ILP=1	492
	IS=1	493
	GO TO 87	494
66	IS=1	495
	J=J+1	496
	A06=A3*A3/6.0	497
	ARCJ=A1+A2+A3	498
	AD=(ASUM+A1)/AA	499
	BD=ASUM/BB	500
	CD=A1/CC	501
36	DO 5 I=1,3	502
	DD=R1(I)/AA-R2(I)/BB+R3(I)/CC	503
	GO TO (6,8),IS	504
6	RT=R1(I)-(A)*R1(I)-BD*R2(I)+CD*R3(I)-DD*ARCJ)*ARCJ	505
	RA(I)=R1(I)	506
	R1(I)=R2(I)	507
	R2(I)=R3(I)	508
	R3(I)=RT	509
	VP(I)=VN(I)	510
8	RBAR=(R2(I)+R3(I))/2.-DD*A06	511
E	VN(I)=VP(I)+A3*RBAR	512
97	IF(VN(2))76,77,77	513
76	VN(2)=-VN(2)	514
77	IF(VN(2)-3.141592653)78,78,79	515
79	VN(2)=6.283185307-VN(2)	516
	GO TO 77	517
78	IF(VN(3))80,81,81	518
80	VN(3)=VN(3)+6.283185307	519
	GO TO 78	520
81	IF(VN(3)-6.283185307)82,82,83	521
83	VN(3)=VN(3)-6.283185307	522
	GO TO 81	523
82	GO TO (9,10),IS	524
9	SIT=MBS(SIN(VN(2)))	525
	PRE1=VN(1)	526
	PRE2=PRE1*VN(2)	527
	PRE3=PRE1*SIT*VN(3)	528
2****	SSQ=SIT*SIT	529

```

2**** OER=(6355.912+SS0*(21.3677+.108*SS0))/6371.2      530
2**** AER=VN(1)-OER      531
2**** CALL MAGNET(AER,SIT,VN(3),BR,BT,BP,B(J),VN(2))      532
    CALL NEWMAG(VN ,SIT,VN(3),BR,BT,BP,B(J),VN(2))      533
    R3(1)=BR/R(J)
    DN=B(J)*VN(1)      534
    R3(2)=BT/DN      535
    R3(3)=BP/(DN*SIT)      536
    ASUM=A3+A2      537
    AA=ASUM*A2      538
    BB=A3*A2      539
    CC=ASUM*A3      540
    IS=2      541
    GO T 36      542
10 CONTINUE      543
    SIT=ARS (SIN (VN(2)))
    B(J)=B(J)*((PRE1/VN(1))**3)      544
    59 QRT=.5*ABS (R3(1))/(.1+ABS (R3(2)*VN(1)))      545
    X=(ABS (VN(1)-PRE1)+QRT*ABS (VN(1)**N(2)-PRE2)+ABS (VN(1)*SIT*VN(3
    1)-PRE3))/(AAB*ERR*SQRT (.1+QRT*QRT))      546
    GO T  (90,93,90),ILP      547
    97 IF(X<-.3) 90,89,89      548
    89 A3=A3*.2*(8.+X)/(8.+X)      549
    J=J-1      550
    ILP=3      551
    ASUM=A2+A1      552
    AA=ASUM*A1      553
    BB=A2*A1      554
    CC=ASUM*A2      555
    DO 91 I=1,3      556
    VN(I)=VP(I)      557
    R3(I)=R2(I)      558
    R2(I)=R1(I)      559
    91 R1(I)=RA(I)      560
    GO T 73      561
    90 IF(J=200) 67,60,60      562
    67 A1=A      563
    IF(B-J)=3(2) 49,49,60      564
    49 ILP=1      565
    A2=A      566
    A3=A * .2*(8.+X)/(8.+X)      567
    AM=(8.-R3(2)*VN(1))*VN(1)*CPE      568
    IF(A.S (A3)-AM) 84,-4,72      569
    72 A3=S*A*AM      570
    84 IF(SMA*R3(1)+.5) 85,85,73      571
    85 AM=-.5*SMA*VN(1)/?*(1)      572
    IF(A.S (A3)-AM) 73,73,86      573
    86 A3=S*A*AM      574
    73 ARC(I+1)=A3      575
    AA3=A3* (A3)      576
    GO T 66      577

```

PROGRAM S2PLAF

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50 RETURN
END

531
542

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```

      SUBROUTINE START (R1,R2,R3,P,ARC,    V)      583
C      VERSION OF DEC 1966      584
      DIMENSION B(200),ARC(200),V(3,3),R1(3),R2(3),R3(3) 585
      SIT=ABS (SIN (V(2,2))) 586
      AER=J(1,2) 587
      SSQ=SIT*SIT 588
C**  DER=(6355.912+SSQ*(21.3677+.108*SSQ))/6371.2 589
      DER=1. 590
      V(1,2)=AER+DER 591
      IF(V(3,2))11,12,12 592
      11 V(3,2)=V(3,2)+6.283185307 593
      GO TO 10 594
C**12 CALL MAGNET(AER,SIT,V(3,2),RR,BT,BP,B(2),V(2,2)) 595
      12 CALL NEWMAG(V(1,2),SIT,V(3,2),BR,BT,BP,B(2),V(2,2)) 596
      R2(1)=BR/B(2) 597
      DN=B(2)*V(1,2) 598
      R2(2)=BT/DN 599
      R2(3)=BP/(DN*SIT) 600
      IS=0 601
      1 DO 2 I=1,3 602
      2 V(I,1)=V(I,2)-ARC(I)*R2(I) 603
      SIT=ABS (SIN (V(2,1))) 604
C**  3 SSQ=SIT*SIT 605
C**  DER=(6355.912+SSQ*(21.3677+.108*SSQ))/6371.2 606
C**  AER=J(1,1)-DER 607
C**  CALL MAGNET(AER,SIT,V(3,1),RR,BT,BP,B(1),V(2,1)) 608
      3 CONTINUE 609
      CALL NEWMAG(V(1,1),SIT,V(3,1),BR,BT,BP,B(1),V(2,1)) 610
      IF(B(1)-B(2))4,5,5 611
      4 ARC(2)=-ARC(2) 612
      GO TO 1 613
      5 R1(1)=BR/B(1) 614
      ARC(3)=ARC(2) 615
      DN=B(1)*V(1,1) 616
      R1(2)=BT/DN 617
      R1(3)=BP/(DN*SIT) 618
      DO 6 I=1,3 619
      6 V(I,1)=V(I,2)-ARC(I)*(R1(I)+R2(I))/2. 620
      SIT=ABS (SIN (V(2,1))) 621
      IS=IS+1 622
      GO TO 3,7,IS 623
      7 DO 8 I=1,3 624
      8 V(I,3)=V(I,2)+ARC(I)*((1.5)*R2(I)-.5*R1(I)) 625
      RETURN 626
      END 627

```

```

      SUBROUTINE INTEG (ARC,BEG,BEND,B,JE2,EC0,FI)      528
C UNCHANGED MAY 1965                                     529
C DIMENSION ARC(200),BEG(200),BEND(200),E(200),EC0(200) 530
  4  KK=JFP                                         531
  6  IF(KK-4) 14,11,20                                532
11  KK=KK-1                                         533
14  A=B(KK-1)/B(2)                                    534
     X2=B(KK)/B(2)                                     535
     X3=B(KK+1)/B(2)                                     536
     ASUM=ARC(KK)+ARC(KK+1)                            537
     DN=ARC(KK)*ARC(KK+1)*ASUM                         538
     BB=(-A*ARC(KK+1)*(ARC(KK)+ASUM)+X2*ASUM**2-X3*ARC(KK)**2)/DN
     C=(A*ARC(KK+1)-X2*ASUM+X3*ARC(KK))/DN           540
     FI=1.570796326*(1.-A+BR*BB/(4.*C))/SQRT (ABS (C)) 541
     RETURN                                              542
20  T=SQRT (1.-BEND(2)/B(2))                         543
     ZET=(1.+T)/(1.-T)                                 544
     IF (ZET.EQ.0.) GO TO 200                           545
     FI=(2.*T-ALOG((1.+T)/(1.-T)))/EC0(2)            546
201 IF(B(2)-BEND(KK)) 21,21,25                      547
200 FI=1000.***1000                                  548
     GO TO 201                                         549
300 FI=1000.***1000                                  550
     GO TO 301                                         551
25  KK=KK+1                                         552
21  T=SQRT (ABS (1.0-BEG(KK)/B(2)))                553
     ZET=(1.+T)/(1.-T)                                 554
     IF (ZET.EQ.0.) GO TO 300                           555
     FI=FI-(2.*T-ALOG((1.+T)/(1.-T)))/EC0(KK)        556
301 KK=KK-1                                         557
22  DO 5 I=3,KK
     ARG1=1.-BEND(I)/B(2)                            558
     IF(ARG1) 26,26,27                               559
26  TE=1.E-5                                         560
     GO TO 28                                         561
27  TE=SQRT (ARG1)                                   562
28  ARG1=1.-BEG(I)/B(2)
     IF(ARG1) 29,29,31                               563
31  TB=SQRT (ARG1)                                   564
     GO TO 32                                         565
29  TB=1.E-5                                         566
32  IF(ABS (EC0(I))-2.E-5) 23,23,24               567
23  FI=FI+((TE+TB)*(ARC(I)+ARC(I+1)))/4.
     GO TO 5                                         568
24  CONTINUE
     ZET3=(1.+TE)**(1.-TB)/((1.-TE)*(1.+TB))
     IF (ZET3.EQ. 0.) FI= 10.***37                  569
     IF (ZET3 .NE. 0.) FI=FI+(2.* (TE-TB)-ALOG(ZET3))/EC0(I)
5  CONTINUE
30  RETURN
     END

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AD-A061 560

EMMANUEL COLL BOSTON MASS
ANALYSIS OF DATA FROM RESEARCH SATELLITES.(U)

JUL 78 E G HOLEMAN, A F DAVIS, M P HAGAN

F/G 4/1

F19628-73-C-0190

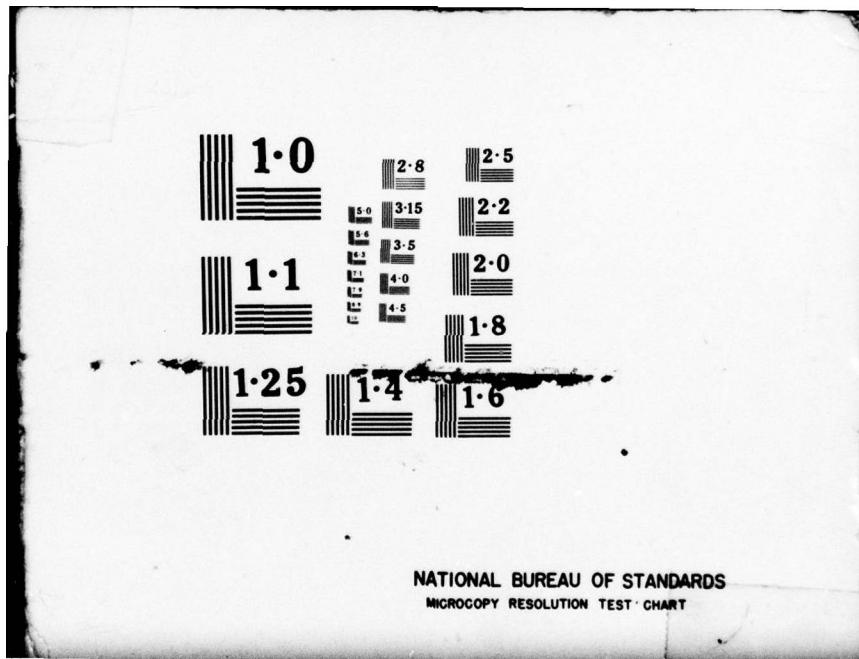
AFGL-TR-78-0181

NL

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      SUBROUTINE CARMEL (B,XI,VL)          679
;TIGETC CARME                         680
;      UNCHANGED MAY 1965                 681
;      COMPUTE -                         682
;      IF(XT-1.0E-36) 14,14,15           683
;      14 VL=(0.311653/3)**(1./3.)       684
;      RETURN                            685
;      15 XX=3.0*ALOG(XT)                686
;      XX=XX+ALOG(B/0.311653)            687
;      IF(XX+22.) 1,1,8                  688
;      8 IF(XX+3.) 2,2,9                  689
;      9 IF(XX-3.) 3,3,10                690
;      10 IF(XX-11.7) 4,4,11              691
;      11 IF(XX-23.) 5,5,6                692
;      1 GG=.333339*XX+.30062102        693
;      GO T) 7                           694
? 2 GG=((((-8.1537735E-14*XX+8.3232531E-13)*XX+1.0166362E-9)*XX+
18.1048663E-9)*XX+3.2916354F-6)*XX+8.2711096E-5)*XX+1.3714667E-3)*
2XX+.015017245)*XX+.434326421*XX+.62337691                         597
GO T) 7                           598
? 3 GG=(((((2.6047023E-10*XX+2.3028757E-9)*XX-2.1997983E-8)*XX-
15.3977642E-7)*XX-3.3408822E-6)*XX+3.8379917E-5)*XX+1.1784234E-3)*
2XX+1.4492441E-2)*XX+.43352788)*XX+.5228644                         701
GO T) 7                           702
4 4 GG=(((((6.3271665E-10*XX-3.958306E-8)*XX+9.9766148E-07)*XX-
11.2531932E-5)*XX+7.9451313E-5)*XX-3.2077032E-4)*XX+2.1680398E-3)*
2XX+1.2817956E-2)*XX+.43510529)*XX+.5222355                         705
GO T) 7                           706
? 5 GG=((((2.9212095E-8*XX-3.8049276E-6)*XX+2.170224F-4)*XX-6.7319339
1E-3)*XX+.12039224)*XX-.18461796)*XX+2.0007187                         708
GO T) 7                           709
6 6 GG=XX-3.0460681                710
7 7 CONTINUE                         711
     IF(GG.GE.88.0) GG = 88.0          712
     VL=((1.0+EXP(-GG))*0.311653)/3)**(1./3.)                          713
     RETURN                            714
     END                                715

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APP-E- 3 - 71

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SUBROUTINE NEWMAG(R,ST ,PHI,BR,BT,BP,R,THET)          716
DIMENSION G(9,9),BM(9)                                     717
COMMON/BLC01/G,BM,J,NMAX,SUM                           718
IF(SUM) 1000,1005,1000                                     719
1000 P22 = 0.                                              720
C**** RELATIVE ERROR IN R                               721
BERR=0.0001                                              722
AR = 0.                                                 723
DO 1001 L=1,NMAX                                         724
DO 1001 M=1,NMAX                                         725
AR = AR + 1.                                             726
1001 P22 = P22 + AR*G(M,L)                            727
SUM=(SUM-P22)/SJM                                         728
IF( ABS (SJM) - 1.E-4) 1004,1004,1002                   729
C**** NOTE FOLLOWING PRINT AND STOP STATEMENTS        730
1002 PRINT 1003,SUM                                      731
1003 FORMAT(21H DATA WRONG IN NEWMAG E15.3)           732
STOP                                                    733
1004 SUM=0.                                              734
1005 P22=ST                                              735
P21=SQRT (1.-P22**22)                                    736
AR=R                                                 737
IF(THET-1.570796327) 154,154,156                      738
156 P21=-P21                                              739
154 IF(J) 152,152,151                                     740
151 SSQ=P22**22                                           741
AR=AR+(14.298-SSQ*(21.3677+108*SSQ))/5371.2          742
152 AR=1./AR                                              743
N= 2                                                       744
159 DP22=P21                                              745
SP2=SIN (PHI)                                            746
CP2=COS (PHI)                                            747
DP21=-P22                                              748
AOR=AR*AR*AR                                             749
C2=G(2,2)*CP2+G(1,2)*SP2                                750
BR=-(AOR+40R)*(G(2,1)*P21+C2*P22)                     751
BT=AOR*(G(2,1)*DP21+C2*DP22)                           752
BP=AOR*(G(1,2)*CP2-G(2,2)*SP2)*P22                    753
IF(NMAX-3) 1,3,3                                         754
AOR=B0R*AR                                              755
ERR=BERR*SQRT ((BP/P22)**2+BR**2+BT**2)                756
IF(BM(3)*40R-ERR) 1,1,103                                757
103 SP3=(SP2+SP2)*CP2                                     758
CP3=(CP2+SP2)*(CP2-SP2)                                 759
P31=DP21*P21-0.3333333333                            760
P32=DP21*P22                                              761
P33=DP22*P22                                              762
DP31=-DP32-DP32                                         763
DP32=DP21*P21-DP33                                     764
DP33=-DP31                                              765
C2=G(3,2)*CP2+G(1,2)*SP2                                766

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C3=G(3,3)*CP3+G(2,3)*SP3          767
BR=BR-3.0*A1R*(G(3,1)*P31+C2*P32+C3*P33) 768
BT=BT+AOR*(G(3,1)*P31+C2*P32+C3*P33)      769
BP=BP-AOR*((G(3,2)*SP2-G(1,3)*CP2)*P32+2.0*(G(3,3)*SP3-G(2,3)*CP3)
1*P33)                                     771
C   N= 4                                772
IF(NMAX=4) 1,4,4                      773
AOR=AOR*AR                               774
IF(BM(4)*AOR-ERR) 1,1,104              775
104 SP4=SP2*CP3+CP2*SP2               776
CP4=CP2*CP3-SP2*SP3                   777
P41=P21*P31-0.26666666*P21           778
DP41=P21*DP31+DP21*P31-0.26666666*DP21 779
P42=P21*P32-0.20000000*P22           780
DP42=P21*DP32+DP21*P32-0.20000000*DP22 781
P43=P21*P33                           782
DP43=P21*DP33+DP21*P33               783
P44=P22*P33                           784
DP44=3.0*P43                         785
C2=G(4,2)*CP2+G(1,4)*SP2             786
C3=G(4,3)*CP3+G(2,4)*SP3             787
C4=G(4,4)*CP4+G(3,4)*SP4             788
BR=BP-4.0*A1R*(G(4,1)*P41+C2*P42+C3*P43+C4*P44) 789
BT=BT+AOR*((G(4,1)*P41+C2*P42+C3*P43+C4*P44) 790
BP=BP-AOR*((G(4,2)*SP2-G(1,4)*CP2)*P42+2.0*(G(4,3)*SP3-G(2,4)*CP3)
1*P43+3.0*(G(4,4)*SP4-G(3,4)*CP4)*P44) 791
IF(NMAX=5) 1,5,5                      792
AOR=AOR*AR                               793
IF(BM(5)*AOR-ERR) 1,1,105              794
105 SP5=(SP3+SP3)*CP3                795
CP5=(CP3+SP3)*(CP3-SP3)               796
DP51=P21*P41+DP21*P41-0.25714285*DP31 797
P51=P21*P41-0.25714285*P31            798
P52=P21*P42-0.22857142*P32           799
DP52=P21*DP42+DP21*P42-0.22857142*DP32 800
P53=P21*P43-0.14285714*P33           801
DP53=P21*DP43+DP21*P43-0.14285714*DP33 802
P54=P21*P44                           803
DP54=P21*DP44+DP21*P44               804
P55=P22*P44                           805
DP55=4.0*P44                         806
DP55=4.0*P54                         807
C2=G(5,2)*CP2+G(1,5)*SP2             808
C3=G(5,3)*CP3+G(2,5)*SP3             809
C4=G(5,4)*CP4+G(3,5)*SP4             810
C5=G(5,5)*CP5+G(4,5)*SP5             811
BR=BP-5.0*A1R*(G(5,1)*P51+C2*P52+C3*P53+C4*P54+C5*P55) 812
BT=BT+AOR*((G(5,1)*P51+C2*P52+C3*P53+C4*P54+C5*P55) 813
BP=BP-AOR*((G(5,2)*SP2-G(1,5)*CP2)*P52+2.0*(G(5,3)*SP3-G(2,5)*CP3)
1*P53+3.0*(G(5,4)*SP4-G(3,5)*CP4)*P54+4.0*(G(5,5)*SP5-G(4,5)*CP5)*P
255)                                     814
C   N= 6                                815
                                                816
                                                817

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6   IF(NMAX=6) 1,6,5          818
    AOR=AOR*1R
    IF(EM(6)*AOR-ERR)      1,1,106        819
105  SP6=SP2*CP5+CP2*SP5      820
    CP6=CP2*CP5-SP2*SP5      821
    P61=P21*D51-0.25395825*P41      822
    DP61=P21*D51+D21*P51-0.25396825*D41      823
    P62=D21*D52-0.23803523*P42      824
    DP62=P21*D52+D21*P52-0.23809523*D42      825
    P63=P21*D53-0.19047619*P43      826
    DP63=P21*D53+D21*P53-0.19047619*D43      827
    P64=P21*D54-0.11111111*P44      828
    DP64=P21*D54+D21*P54-0.11111111*D44      829
    P65=D21*D55      830
    DP65=P21*D55+D21*P55      831
    P66=P22*D55      832
    DP66=5.0*P65      833
    C2=G(6,2)*C2+G(1,6)*SP2      834
    C3=G(6,3)*C3+G(2,6)*SP3      835
    C4=G(6,4)*C4+G(3,6)*SP4      836
    C5=G(6,5)*C5+G(4,6)*SP5      837
    C6=G(6,6)*C6+G(5,6)*SP6      838
    BR=ER-6.0*AOR*(G(6,1)*P61+C2*D62+C3*D63+C4*D64+C5*D65+C6*D6)
    BT=BT+AOR*(G(6,1)*P61+C2*D62+C3*D63+C4*D64+C5*D65+C6*D6)
    BF=BP-AOR*((G(6,2)*SP2-G(1,6)*CP2)*D52+2.0*(G(6,3)*SP3-G(2,6)*CP3)
1*D63+3.0*(G(6,4)*SP4-G(3,6)*CP4)*P64+4.0*(G(6,5)*SP5-G(4,6)*CP5)*P
265+5.0*(G(6,6)*SP6-G(5,6)*CP6)*P66)      839
    IF(NMAX=7) 1,7,7          840
7   AOR=AOR*1R
    IF(EM(7)*AOR-ERR)      1,1,107        841
107  SP7=(SP4+SP4)*C4        842
    CP7=(CP4+SP4)*(CP4-SP4)      843
    P71=P21*D61-0.25252525*P51      844
    DP71=P21*D61+D21*P51-0.25252525*D51      845
    P72=P21*D62-0.24242424*P52      846
    DP72=P21*D62+D21*P52-0.24242424*D52      847
    P73=P21*D63-0.21212121*P53      848
    DP73=P21*D63+D21*P53-0.21212121*D53      849
    P74=P21*D64-0.16161616*P54      850
    DP74=P21*D64+D21*P54-0.16161616*D54      851
    P75=P21*D65-0.09090909*P55      852
    DP75=P21*D65+D21*P55-0.09090909*D55      853
    P76=P21*D66      854
    DP76=P21*D66+D21*P56      855
    P77=P22*D66      856
    DP77=6.0*D75      857
    C2=G(7,2)*C2+G(1,7)*SP2      858
    C3=G(7,3)*C3+G(2,7)*SP3      859
    C4=G(7,4)*C4+G(3,7)*SP4      860
    C5=G(7,5)*C5+G(4,7)*SP5      861
    C6=G(7,6)*C6+G(5,7)*SP6      862

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C7=G(7,7)*C27+G(6,7)*SP7          869
BR=BR-7.0*AOR*(G(7,1)*P71+C2*P72+C3*D73+C4*D74+C5*D75+C6*D76+C7*D77
17)                                     871
BT=BT+AOR*(G(7,1)+P71+C2*D72+C3*D73+C4*D74+C5*D75+C6*D76+C7*D77
1DP77)                                     873
BP=BP-AOR*((G(7,2)*SP2-G(1,7)*CP2)*D72+2.0*(G(7,3)*SP3-G(2,7)*CP3)
1*P73+3.0*(G(7,4)*SP4-G(3,7)*CP4)*P74+4.0*(G(7,5)*SP5-G(4,7)*CP5)*P
275+5.0*(G(7,6)*SP6-G(5,7)*CP6)*P76+6.0*(G(7,7)*SP7-G(6,7)*CP7)*P77
3)                                     877
IF(NMAX-8) 1,8,8                      878
AOR=AOR*AR                            879
IF(BM(8)*AOR-ERR) 1,1,108            880
105 SP8=SP2*CP7+CP2*SP7              881
CP8=CP2*CP7-SP2*SP7                  882
P81=D21*D71-0.25174825*D61          883
DP81=D21*D71+D21*D71-0.25174825*D51
P82=D21*D72-0.24475524*D62          885
DP82=D21*D72+D21*D72-0.24475524*D52
P83=D21*D73-0.22377622*D63          887
DP83=D21*D73+D21*D73-0.22377622*D63
P84=P21*D74-0.15881118*D64          889
DP84=P21*D74+D21*D74-0.18981118*D54
P85=D21*D75-0.13986013*D65          891
DP85=D21*D75+D21*D75-0.13986013*D65
P86=D21*D76-0.07692307*D66          893
DP86=D21*D76+D21*D76-0.07692307*D56
P87=D21*D77
DP87=D21*D77+D21*D77               896
P88=D22*D77                           897
DP88=D7.0*D87                         898
C2=G(8,2)*C2+G(1,8)*SP2              899
C3=G(8,3)*C3+G(2,8)*SP3              900
C4=G(8,4)*C4+G(3,8)*SP4              901
C5=G(8,5)*C5+G(4,8)*SP5              902
C6=G(8,6)*C6+G(5,8)*SP6              903
C7=G(8,7)*C7+G(6,8)*SP7              904
C8=G(8,8)*C8+G(7,8)*SP8              905
BR=BR-8.0*AOR*(G(8,1)*P81+C2*P82+C3*D83+C4*D84+C5*D85+C6*D86+C7*D87
17+C8*D88)                           907
BT=BT+AOR*(G(8,1)+P81+C2*D82+C3*D83+C4*D84+C5*D85+C6*D86+C7*D87
1DF87+C8*D88)                         909
BP=BP-AOR*((G(8,2)*SP2-G(1,8)*CP2)*D82+2.0*(G(8,3)*SP3-G(2,8)*CP3)
1*P83+3.0*(G(8,4)*SP4-G(3,8)*CP4)*P84+4.0*(G(8,5)*SP5-G(4,8)*CP5)*P
285+5.0*(G(8,6)*SP6-G(5,8)*CP6)*P86+6.0*(G(8,7)*SP7-G(6,8)*CP7)*P87
3+7.0*(G(8,8)*SP8-G(7,8)*CP8)*P88)  913
IF(NMAX-9) 1,9,9                      914
AOR=AOR*AR                            915
IF(BM(9)*AOR-ERR) 1,1,109            916
109 SP9=(SP5+SP5)*CP5                917
CP9=(CP5+SP5)*(CP5-SP5)              918
P91=D21*D91-0.25129205*D71          919

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DP91=P21*DP81+DP21*P81-0.25128205*D71	920
DP92=P21*D82-0.24615384*P72	921
DP93=P21*D82+DP21*P82-0.24615384*D72	922
P93=D21*D83-0.23076923*D73	923
DP93=DP21*D83+DP21*P83-0.23076923*D73	924
P94=D21*D84-0.20512820*D74	925
DP94=DP21*DP84+DP21*P84-0.20512820*D74	926
P95=D21*D85-0.16923076*D75	927
DP95=DP21*DP95+DP21*P85-0.16923076*D75	928
P96=D21*D86-0.12307692*D76	929
DP96=DP21*D86+DP21*P86-0.12307692*D76	930
P97=D21*D87-0.05666666*D77	931
DP97=DP21*DP87+DP21*P87-0.05666666*D77	932
P98=D21*D88	933
DP98=DP21*DP88+DP21*P88	934
P99=D22*D88	935
DP99=8.0*P93	936
C2=(9,2)*CP2+G(1,4)*SP2	937
C3=G(9,3)*CP3+G(2,3)*SP3	938
C4=G(9,4)*CP4+G(3,2)*SP4	939
C5=G(9,5)*CP5+G(4,3)*SP5	940
C6=G(9,6)*CP6+G(5,2)*SP6	941
C7=G(9,7)*CP7+G(6,2)*SP7	942
C8=G(9,8)*CP8+G(7,2)*SP8	943
C9=G(9,9)*CP9+G(8,2)*SP9	944
BR=BR-3.0*AOR*(G(9,1)*P91+C2*P92+C3*D92+C4*P94+C5*D95+C6*P96+C7*D9	945
17+C8*D98+C9*D99)	946
BT=BT+AOR*(G(9,1)*DP91+C2*D92+C3*D93+C4*DP94+C5*D95+C6*DP96+C7*	947
10P97+C8*D98+C9*D99)	948
BP=BP-102*((G(9,2)*SP2-G(1,9)*CP2)*D92+2.0*(G(9,3)*SP3-G(2,9)*CP3)	949
1*P93+3.0*(G(9,4)*SP4-G(3,9)*CP4)*P94+4.0*(G(9,5)*SP5-G(4,9)*CP5)*P	950
295+5.0*(G(9,6)*SP6-G(5,9)*CP6)*P96+5.0*(G(9,7)*SP7-G(6,9)*CP7)*P97	951
3+7.0*(G(9,9)*SP8-G(7,9)*CP8)*P98+8.0*(G(9,9)*SP9-G(8,9)*CP9)*P99)	952
IF(NMAX-10) 1,10,1	953
10 AOR=AOR*1R	954
IF(BM(10)*AOR-ERR) 1,1,1010	955
1010 SP10=SP2*CP3+CP2*SP9	956
CP10=CP2*CP3-SP2*SP9	957
P101=P21*D91-0.25098039*P81	958
DP101=P21*D91+DP21*D91-0.25098039*D81	959
P102=P21*D92-0.24705682*P82	960
DP102=P21*D92+DP21*P92-0.24705882*D82	961
P103=P21*D93-0.23529411*P83	962
DP103=P21*D93+DP21*D93-0.23529411*D83	963
P104=P21*D94-0.21568627*P84	964
DP104=P21*D94+DP21*P94-0.21568627*D84	965
P105=P21*D95-0.18823529*P85	966
DP105=P21*D95+DP21*P95-0.18823529*D85	967
P106=P21*D96-0.15294117*P86	968
DP106=P21*D96+DP21*P96-0.15294117*D86	969
P107=P21*D97-0.10940392*P87	970

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DP107=P21*D97+DP21*D97-0.1(980392*D97) 371
P108=P21*D93-0.0592352*P88 372
DP109=P21*D98+DP21*D98-0.05882352*D98 373
P109=P21*D93 374
DP109=P21*D99+DP21*D99 375
P1010=P22*D99 376
DP1010=9.0*D109 377
C2=G(10,2)*CP2+G(1,10)*SP2 378
C3=G(10,3)*CP3+G(2,10)*SP3 379
C4=G(10,4)*CP4+G(3,10)*SP4 380
C5=G(10,5)*CP5+G(4,10)*SP5 381
C6=G(10,6)*CP6+G(5,10)*SP6 382
C7=G(10,7)*CP7+G(6,10)*SP7 383
C8=G(10,8)*CP8+G(7,10)*SP8 384
C9=G(10,9)*CP9+G(8,10)*SP9 385
C10=G(10,10)*CP10+G(9,10)*SP10 386
BR=BR-10.0*AOR*(G(10,1)*P101+C2*D102+C3*D103+C4*D104+C5*D105+C6*D1
106+C7*D107+C8*D108+C9*D109+C10*D101) 388
RT=BT+AOR*(G(10,1)*P101+C2*D102+C3*D103+C4*D104+C5*D105+C6*D106+C7*D107+C8*D108+C9*D109+C10*D101) 390
BP=BR-AOR*((G(10,2)*SP2-G(1,10)*CP2)*P102+2.0*(G(1,3)*SP3-G(2,10)
2,10)*CP3)*P103+3.0*(G(10,4)*SP4-G(3,10)*CP4)*P104+4.0*(G(10,5)*SP5-G(4
2,10)*CP5)*P105+5.0*(G(10,6)*SP6-G(5,10)*CP6)*P106+5.0*(G(10,7)*SP7
3-G(6,10)*CP7)*P107+7.0*(G(10,8)*SP8-G(7,10)*CP8)*P108+8.0*(G(10,9)
4*SP9-G(8,10)*CP9)*P109+9.0*(G(10,10)*SP10-G(9,10)*CP10)*P1010) 392
1 SP=BP/P22*1.E-5 396
BT=BT*1.E-5 397
BR=BR*1.E-5 398
S=SQRT(BR*BR+BT*BT+BP*BP) 399
RETURN 1000
END 1001

```

```

SUBROUTINE INTER (X,F,NV,ITIME,IPRINT,XX,FXX)          1002
DIMENSION X(NV),F(NV),D(4,21)                         1003
NX = NV - 1                                            1004
NY = NV - 2                                            1005
IF(ITIME.NE.0) GO TO 5                                1006
DO 1 J = 1,NX                                         1007
 1 D(1,J) = (F(J+1)-F(J))/(X(J+1)-X(J))             1008
DO 2 J = 2,NX                                         1009
 2 D(2,J) = (D(1,J)-D(1,J-1))/(X(J+1)-X(J-1))      1010
DO 3 J = 2,NY                                         1011
 3 D(3,J) = (D(2,J+1)-D(2,J))/(X(J+2)-X(J-1))      1012
DO 4 J = 3,NY                                         1013
 4 D(4,J) = (D(3,J)-D(3,J-1))/(X(J+2)-X(J-2))      1014
5 IF(XX.GE.X(2).AND.XX.LT.X(NX)) GO TO 6            1015
  IF(XX.LT.X(2))                                     1016
    1 FXX = F(1) + (XX-X(1))*D(1,1) + (XX-X(1))*(XX-X(2))*D(2,2)
    IF(XX.GT.X(NX))                                     1018
    1 FXX = F(NX) + (XX-X(NX))*D(1,NX) + (XX-X(NX))*(XX-X(NY))*D(2,NY)
    GO TO 9                                           1020
F DO 7 K = 2,NY                                         1021
  IF(XX.LT.X(K).OR.XX.GE.X(K+1)) GO TO 7
  IF((XX-X(K)).LE.(X(K+1)-XX)) GO TO 8
  FXX = F(K) + (XX-X(K))*D(1,K) + (XX-X(K))*(XX-X(K+1))*D(2,K+1)
  GO TO 9                                           1025
7 CONTINUE
8 FXX = F(K) + (XX-X(K))*D(1,K) + (XX-X(K))*(XX-X(K+1))*D(2,K)
9 IF(IPRINT.NE.0) GO TO 20
  WRITE(6,12)
12 FORMAT(1I1,59H X           F(X)       DIF1       DIF2       DIF3
  1 DIF4///)
  DO 14 K = 1,NV
    WRITE(6,10) X(K),F(K),D(2,K),D(4,K)
14 WRITE(6,11) D(1,K),D(3,K)
15 FORMAT(F6.2,5X,3(F10.5,10X)//)
11 FORMAT(21X,2(F10.5,10X)//)
20 RETURN
END

```

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```

SUBROUTINE COEFFG(KSRF,EL,BE,SLL)
1039
DIMENSION EL(21),BE(21),SL(21),OB(21),BS(21),BEE(21),SLL(21)
1041
DIMENSION G(9,9),GT(9,9),BM(9),GY(9,9)
1042
COMMON/BLOC1/GY,BM,J,NMAX,SUM
1043
DATA G/    0.
C, .604035E+05,-.694380E+05,-.226000E+04,-.102077E+05, .311579E+05
C,-.351543E+04,-.282472E+05, .937586E+04,-.102775E+05, .192185E+05
C,-.416396E+04,-.587450E+05,-.227907E+04, .183464E+05,-.122775E+05
C,-.139940E+05, .520832E+05,-.366865E+05,-.285316E+05,-.407949E+04
C, .157331E+03,-.249926E+05, .419039E+05, .322422E+05,-.398356E+05
C, .662893E+05, .255038E+05, .219502E+04,-.118227E+05,-.656957E+04
C, .418885E+03, .567099E+04, .394771E+05,-.203659E+05, .497035E+03
C,-.121211E+04, .177994E+05, .119025E+05,-.590732E+04,-.324079E+04
C, .357183E+03,-.430546E+04, .758551E+04, .106945E+03, .457852E+03
C, .247117E+05,-.218156E+05, .372490E+04,-.467581E+03, .182791E+04
C,-.181957E+04, .555702E+02,-.301796E+04,-.331655E+05,-.133312E+05
C, .394764E+05,-.116204E+05, .480488E+03, .119662E+04,-.188741E+03
C,-.993254E+03, .408139E+04,-.746472E+05, .178544E+05, .162599E+05
C, .474193E+04, .471100E+04, .997789E+03, .392562E+03,-.761824E+03
C,-.150787E+04, .129705E+05,-.213114E+05,-.246238E+05,-.100527E+05
C,-.890195E+04,-.554710E+04,-.147026E+04,-.359419E+03,-.619500E+03
C/
1060
DATA GT/    0.
1061
C,-.153000E+02, .365000E+02,-.500000E+00, .306182E+01,-.149627E+02
C, .144373E+01, .134064E+02,-.502727E+01, .230000E+01,-.870000E+01
C,-.520000E+00, .330682E+02,-.110727E+01,-.111836E+02, .567091E+01
C, .126409E+02,-.258125E+02, .204382E+02, .144626E+02, .138545E+01
C,-.175545E+01, .117391E+02,-.222873E+02,-.164387E+02, .202725E+02
C,-.336494E+02,-.129600E+02,-.135555E+01, .608745E+01, .300419E+01
C, .209182E+00,-.292373E+01,-.189291E+02, .102393E+02, 0. 1068
C, .553455E+00,-.625691E+01,-.606578E+01, .310600E+01, .155291E+01
C, 0. , .219274E+01,-.370473E+01, 0. , -.233831E+02
C,-.130643E+02, .117949E+02,-.177482E+01, .210464E+00,-.912027E+00
C, .930725E+00, 0. , .148303E+01, .170128E+02, .597818E+01
C,-.199255E+02, .600255E+01,-.232682E+01,-.604521E+00, .134335E+00
C, .494364E+00,-.205957E+01, .390173E+02,-.868827E+01,-.819136E+01
C,-.246973E+01,-.246973E+01,-.484364E+00,-.194177E+00, .388355E+00
C, .752055E+00,-.670309E+01, .112165E+02, .124258E+02, .534719E+01
C, .444917E+01, .274609E+01, .752051E+01, .188014E+00, .313354E+00
C/
1078
DATA BM/ .991934E+05
1079
C, .991934E+05, .374862E+05, .244272E+05, .129915E+05
C, .621152E+04, .302467E+04, .127136E+04, .377433E+03
C/
1082
DATA BE/.956739,1.27945,1.33083,1.44437,1.66801,1.86777, 1083
+.205220,2.22592,2.39004,2.53963,2.67014,2.77546, 1084
+.284604,2.98595,2.99716,2.88815,2.85748,2.83612,2.80352, 1085
+.276229,2.72037/ 1086
DATA D3/.315765,.529916,.554383,.603814,.719287,.816979,.907366,
+.12854,1.177572,1.147301,1.211632,1.23221,1.29712, 1087
+.1715467,1.315391,1.312039,1.29921,1.180449,1.261176, 1088

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```

+1.237467,1.213395/ 1090
DATA SL/.164654,1.064938,.762276,.749650,.821132,.900768, 1091
+.97823,1.057715,1.135386,1.206095,1.267318,1.312199,1.328489,
+.325078,1.301284,1.266225,1.228001,1.185870,1.149361,1.106291,
+1.065532/ 1094
DATA DS/.0493822,.503208,.347607,.333029,.374478,.414186,.453381,
+.493194,.532534,.568446,.599601,.622439,.630635,.628619, 1095
+.615995,.597417,.577039,.554531,.535332,.511624,.439605/ 1097
DATA IFG1/1/ 1098
IF(IFG1.EQ.2) GO TO 41 1099
DO 40 II=1,21 1100
DB(II)=D2(II)*(-.001) 1101
SL(II)=SL(II)*(-.001) 1102
DS(II)=DS(II)*.000001 1103
40 CONTINUE 1104
IFG1=2 1105
*1 CONTINUE 1106
YR=XGRF 1107
AR=0 1108
SUM=0 1109
DO 10 K=1,9 1110
DO 10 I=1,9 1111
GY(I,K)=G(I,K)+YRF*ST(I,K) 1112
AR=AR+1 1113
SUM=SUM+AR*GY(I,K) 1114
10 CONTINUE 1115
DO 20 I=1,21 1116
SLL(I)=SL(I)+YRF*DS(I) 1117
REE(I)=EE(I)+YRF*DB(I) 1118
CONTINUE 1119
J=0 1120
NMAX=9 1121
EL(1)=1.15 1122
EL(2)=1.2 1123
EL(3)=1.25 1124
EL(4)=1.3 1125
DO 30 II=5,21 1126
EL(II)=EL(II-1)+.1 1127
30 CONTINUE 1128
C$10C$1WRITE(6,2003) XGRF 1129
2003 FORMAT(1I1,4X,*IGRF *,F7.1,* USED IN THIS CALCULATION*///)
C$10C$1WRITE(6,2001) (EL(J),REE(J),SLL(J),J=1,21) 1131
2001 FORMAT(5K,F5.1,F10.5,E15.5) 1132
RETURN 1133
END 1134

```

```

SUBROUTINE S2UP2(KDAT, IDAT, MKD)           1135
DIMENSION KDAT(MKD), IDAT(300)             1136
MKD=2                                       1137
GO TO 10                                     1138
ENTRY S2JP3                                    1139
MKD=3                                       1140
GO TO 10                                     1141
ENTRY S2JP4                                    1142
MKD=4                                       1143
GO TO 10                                     1144
ENTRY S2JP5                                    1145
MKD=5                                       1146
CONTINUE
1000=MKD/MKD
DO 20 IT=1,MKD
JJ1=51
JJ2=MKD*(II-1)+1                           1151
JJ3=JJ2+MKD-1                               1152
DO 20 JJ=JJ2,JJ3                            1153
JJ1=JJ1-MKD
IDAT(JJ)=L9YTX(JJ1,IKD,KDAT(II))          1154
CONTINUE                                     1155
RETURN                                       1156
END                                         1157
                                             1158

```

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```

PROGRAM S2SAB1(DFILE,EFILE,YFILE,ZFILE,OUTPUT=64,
+TAPE1=DFILE,TAPE2=YFILE,TAPE3=ZFILE,TAPE6=OUTPUT)
***** 10
***** 11
***** 12
***** 13
C 1976 PROGRAM. E. HOLEMAN. LAST ALTERATION 23 JUL 76 14
C FROM S2BLAF 7 JAN 76. 15
C***** 16
C***** 17
C PRELIMINARY SORT OF DATA BY LATITUDE AND LONGITUDE. 18
C SEPARATION ONLY. NO SORTING YET. 19
C***** 20
C***** 21
C IGT3 COUNTS RECORDS READ. 22
C***** 23
C***** 24
C 467008 CM STORAGE REQUIRED FOR LOADING. 25
C***** 26
C***** 27
C***** 28
C***** 29
C***** 30
C***** 31
C***** 32
C***** 33
C***** 34
C***** 35
DIMENSION KDAT(27,18),IDA(78),ERG(33),FERG(33),
+FHED(30),IHED(30),LTIM(8),JDAT(65),IOUT(14,13),XPA(13),
+LDAT(4,8),BATT(2,15),JDA(15),
+IPAD1(12,12),IPAD2(8,12,3),IANN(100),
+IMAT(13,12),JMAT(8,12),KMAT(200),LARL(2)
EQUIVALENCE(FHED,IHED)
EQUIVALENCE(IPAD1,JMAT)
COMMON /IOGEOG/ OMEGA,THETA,RIOTA,RVM,XLT,XLG,ALT,XLTM,XLG4
DATA IPAD1,IPAD2,IOUT /614*0/
DATA ERG /116.,100.,60.,58.,50.,29.,25.,15.5,15.,14.3,
+13.,9.14,8.52,8.,5.69,6.41,6.1,6.02,5.61,5.5,5.31,
+2.927,2.63,2.638,2.01,1.445,.248,6.59,4.03,3.64,
+1.56,1.35,1.24/
FLUX(IFLY)=FLOAT(IFLY.AND.MASKB)/FLOAT(SHTET(IFLY,-45))
MASKB=SHFT(13,-4)
MASKB=7777777777777777
IFGC=0
SNB=0.
SLF=0.
REWIND1
REWIND2
REWIND3
REWIND9
TG=SECOND(TTT)
WRITE(8,2004)
2004 FORMAT(141,4X,*PROCESSING REGRUN TN S2SAB*)
50 CONTINUE
IFGC=-1
IDLT=0
ICT1=0
ICT3=0
ICT4=0

```

```

T1=SECOND(TTT)                                61
READ(1) IWC,IGC,(FHED(I),I=1,IWC)           62
IF(EOF(1)) 110,50                            63
60  CONTINUE                                     64
      MNEM9=FHED(IWC)                         65
      FHED(IWC)=5.LEFILE                      66
      RIOTA=FHF0(21)                          67
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6) 68
+001 FORMAT(R4,R5,2X,A10,1X,A8)               69
      TTTL=0.                                    70
      ALTL=0.                                    71
      DTHT=.047                                 72
      WRITE(2) IWC,IGC,(FHED(I),I=1,IWC)         73
      GMT1=FLOAT(IHED(18))/1000.                  74
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.    75
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT            76
      CALL TDATB(LTIM,TMA,MON,FHED(27),IHED(26),11B) 77
      WRITE(6,201)                               78
      WRITE(9,201)                               79
201) FORMAT(141)                             80
      WRITE(6,2003) FHED(27),MON,LABL          81
      WRITE(8,2003) FHFD(27),MON,LABL          82
      WRITE(9,2003) FHED(27),MON,LABL          83
200* FORMAT(5X,*ORBIT T0*,F8.2,A10,2X,3A13) 84
      TTTL=-999                                 85
      TLLG=-999                                 86
      TALL=-999                                 87
      60  CONTINUE                                88
*****                                     89
C READ MASTER FRAME INPUT
*****                                     90
      READ(1) IWC,IGC,((KDAT(I,J),I=1,IWC),J=1,IGC) 91
      IEOF=EOF(1)                                92
      IF(IEOF.NE.0) GO TO 20                     93
      IF(KDAT(IWC,IGC).NE.10HMAG RECORD) GO TO 10 94
      ISA=0                                     95
      ISB=0                                     96
      JGC=IGC-1                                97
      CALL S2HK3(KDAT(1,1),JDAT,KDAT(1,JGC),TANN) 98
      DO 130 II=1,6                           99
      ISA=ISA+TANN(II)                         100
130  CONTINUE                                101
      DO 240 II=7,16                           102
      ISB=ISB+TANN(II)                         103
240  CONTINUE                                104
      IF(ISA.LT.800.AND.ISB.LT.11E0) GO TO 10 105
      ICT3=ICT3+1                            106
      CALL S2U3(KDAT(1,IGC),IDA,26)             107
      ALT=IDA(1)                             108
      RKM=ALT+6371.2                         109
      RNM=RKM/1.85325                        110
                                              111

```

```

OMEGA=FLOAT(IDA(5))/100.          112
THETA=FLOAT(IDA(4))/100.          113
IF(ABS(THETA-THTL).LT..5) THTL=0. 114
IF(ABS(THETA-THTL).GT.5.) THTL=0. 115
IF(ALTL.LT.100.) ALTL=ALTL      116
IF(APS(THTL).GT.1.E-6) DTHT=(THETA-THTL)/16. 117
TALT=(ALT-ALTL)/15.               118
TALT1=1.1*TALT                  119
TALT2=TA_T/1.1                   120
IF(ABS(TALT2-TALT1).LT.1.) DALT=TALT 121
IF((TALT1-DALT)*(DALT-TALT2).GT.0.) DALT=TALT 122
IF(DTHT.GT..063) DTHT=DTHT/2.       123
IF(DTHT.GT..063) DTHT=.063        124
C*10 PRINT 3005,ALT,ALTL,DALT    125
3005 FORMAT(1X,2F8.0,F3.4)
THTL=THETA                      126
ALTL=ALT                         127
II2=45                           128
DO 260 II=1,15                   129
DO 260 JJ=1,2                     130
II2=II2+1                        131
BATT,JJ,II)=FLOAT(IDA(II2))/100. 132
260 CONTINUE                      133
C*****                         134
C WRITE MASTER FRAME OUTPUT     135
C*****                         136
C*****                         137
II2=ILGC-2                       138
II1=1                           139
30 CONTINUE                      140
JDA(14)=KDAT(1,II1)              141
DO 70 II=II1,II2                 142
THETA=THTL+DTHT                  143
ALT=ALT+DALT                     144
RKM=ALT+6371.2                   145
RNM=RKM/1.85325                 146
CALL GEOGA(TMA)                 147
IF(XLTM.GT.180.) XLTM=XLTM-360. 148
IF(XLT.GT.180.) XLT=XLT-360.    149
TMA=TMA+1.                        150
ILTC=XLT/5.                      151
ILGC=XLG/5.                      152
IALC=ALT/100.                     153
IF(ILTC.NE.ILTL.OR.ILGC.NE.ILGL) GO TO 20 154
IF(IALL.NE.IALC) GO TO 20        155
JDA(1)=JDA(1)+IFIX(ALT)          156
JDA(2)=JDA(2)+IFIX(100.*XLT)    157
JDA(3)=JDA(3)+IFIX(100.*XLG)   158
JDA(4)=JDA(4)+IFIX(100.*THETA) 159
JDA(5)=JDA(5)+IFIX(100.*OMEGA) 160
JDA(6)=JDA(6)+IFIX(100.*XLTM) 161
JDA(13)=JDA(13)+IFIX(100.*XLGM) 162

```

```

      JDA(15)=JDA(15)+1          163
      DO 330 JJ=7,12            164
      JDA(JJ)=JDA(JJ)+IDLT(JJ+33) 165
 330  CONTINUE                166
      ALT2=ALT                  167
      XLT2=XLT4                  168
      XLG2=XLGM                  169
      IDLT=IDLT+1                170
      ICT1=ICT1+1                171
      CALL S2U?3(<DAT(1,II),JDAT,<DAT(1,17)) 172
      IF(IFGB.GT.5) IFGB=0       173
      IFGA=SHIFT(JDAT(2),-15)    174
      IF(IFGR.NE.0) IFGR=IFGR+1  175
      IF(IFGB.EQ.0.AND.IFGA.EQ.1) IFGB=1 176
      JDAT(2)=JDAT(2).AND.777778 177
      CALL S2PAL(JDAT(14),LDAT,LCHN) 178
  *****
  C ADD DATA TO PITCH ANGLE DISTRIBUTION 179
  *****
      IPA=ABS(BATT(1,II))/15.+1. 180
      IF(IPA.GT.12) IPA=12       181
      IF(IPA.LT.1) IPA=1        182
      IF(IFGB.GT.1) GO TO 70    183
      DO 150 JJ=1,12            184
      IPAD1(JJ,IPA)=IPAD1(JJ,IPA)+JDAT(JJ+1)*MASKA 185
 150  CONTINUE                186
      DO 230 JJ=1,3            187
      IPAD2(LCHN,IPA,JJ)=IPAD2(LCHN,TPA,JJ)+LDAT(JJ,LCHN)*MASKA 188
 230  CONTINUE                189
 70   CONTINUE                190
      GO TO 10                  191
 20   CONTINUE                192
 21   CONTINUE                193
 22   CONTINUE                194
 2310:1 PRINT 3002,IFGC,IEOF,IDLTT 195
 3002 FORMAT(1X,9I5)
      IT1=II
      IF(IFGC.LT.0) GO TO 30    196
      IF(IEOF.NE.0.AND.IDLT.LE.2) GO TO 100 197
      IF(IDLT.LE.2) GO TO 30    198
      ICT4=ICT4+1                199
  *****
  C PRINT OUT 6+ SECOND PITCH ANGLE DISTRIBUTIONS AND ZERO SUMS. 200
  *****
      SNB=JDA(15)                201
      IF(SNB.LT.1.) SNB=1.        202
      DO 340 II=1,13            203
      JDA(II)=FLOAT(JDA(II))/SNB+.5 204
 340  CONTINUE                205
      ALTA=JDA(1)                206
      XLTA=FLOAT(JDA(2))/100.     207
      XLGA=FLOAT(JDA(3))/100.     208
      XLTMA=FLOAT(JDA(6))/100.    209
      210
      211
      212
      213

```

```

XLGMA=FLOAT(JDA(13))/100.          214
BAA=FLOAT(JDA(7))/10000.           215
FLA=FLOAT(JDA(8))/1000.            216
HMNA=JDA(9)                         217
CALL AUTOC(IDA,<MAT,15,JWDD,KWDD)  218
WRITE(9,2005) X_TMA,XLGMA,ALTA,TDLT,BAA,FLA,HMNA 219
2005 FORMAT(//10X,*MLAT =*,F8.2,* MLONG =*,F8.2,* ALT =*, 220
+*F8.1,* TIME INTERVAL IS *,I4/10X,*BV =*,F8.3,* -AV =*, 221
+*F8.2,* TMAV =*,F8.1)             222
WRITE(9,2001)                      223
2001 FORMAT(/5X,*P-ANG PA1 N1 PA2 N2 PA3 N3 PA4 * 224
+*N4 PA5 N5 PA6 N6 PA8 N8*)        225
*****                         226
C SET UP LEPS PITCH ANGLE MATRIX 227
*****                         228
DO 170 II=1,12                     229
XPA(II)=FLOAT(15*(II-1))+7.5      230
IMAT(13,II)=SHIFT(IPAD1(1,II),-45) 231
DO 180 JJ=1,12                     232
TMAT(JJ,II)=IPAD1(JJ,II).AND.MASKB 233
180 CONTINUE                         234
2009 FORMAT(2X,F5.1,I4,T7,3I6,RI7)  235
2017 FORMAT(2X,F5.1,I4,F9.1,3F8.1,8F9.1) 236
170 CONTINUE                         237
KWD=KWDD+1                          238
CALL AUTOC(IMAT,KMAT(KWD),156,JWDD,<RD) 239
KWDD=KWD+KWDD-1                    240
*****                         241
C SET UP P-ALPHA COINC MODE AND FRONT OFF PA MATRICES 242
*****                         243
DO 180 II=1,12                     244
DO 200 JJ=1,8                      245
JMAT(JJ,II)=IPAD2(JJ,II,1).AND.MASK3 246
IF (JJ.GT.5) GO TO 200              247
IJ=2*JJ-1                          248
IOUT(IJ,II)=JMAT(JJ,II)            249
IF (II.EQ.1) IOUT(IJ,13)=0          250
IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,II) 251
200 CONTINUE                         252
2011 FORMAT(2X,F5.1,2(,3I7,2I8,2I5,I7,10*)) 253
190 CONTINUE                         254
KWD=<WDD+1                          255
CALL AUTOC(JMAT,KMAT(KWD),92,JWDD,KWD) 256
KWDD=KWD+KWDD-1                    257
IOUT(11,13)=0                      258
DO 320 II=1,12                     259
DO 350 JJ=1,8                      260
JMAT(JJ,II)=IPAD2(JJ,II,2).AND.MASK3 261
350 CONTINUE                         262
IOUT(11,II)=JMAT(9,II)             263
IOUT(11,13)=IOUT(11,13)+IOUT(11,II) 264

```

```

320 CONTINUE 265
  KWD=KWD+1 266
  CALL AUTOD(JMAT,KMAT(KWD),95,JWDD,KWD) 267
  KWDD=KWD+KWDD-1 268
* **** 269
2 SET UP BACK DET AND NO OF OBS MATRICES 270
* **** 271
  TOUT(13,13)=0 272
  DO 210 IT=1,12 273
  DO 220 JJ=1,8 274
  JMAT(JJ,IT)=IPAD2(JJ,IT,3).AND.MASK? 275
220 CONTINUE 276
  IOUT(13,IT)=JMAT(5,IT) 277
  IOUT(13,13)=IOUT(13,13)+IOUT(13,IT) 278
210 CONTINUE 279
  KWD=KWD+1 280
  CALL AUTOD(JMAT,KMAT(KWD),95,JWDD,KWD) 281
  KWDD=KWD+KWDD-1 282
  DO 310 IT=1,12 283
  DO 350 JJ=1,8 284
  JMAT(JJ,IT)=SHIFT(IPAD2(JJ,IT,1),-45) 285
  IF(JJ.GT.5) GO TO 360 286
  IJ=2*JJ 287
  IOUT(IJ,IT)=JMAT(JJ,IT) 288
  IF(IT.EQ.1) IOUT(IJ,13)=0 289
  IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,IT) 290
350 CONTINUE 291
  TOUT(12,13)=0 292
  IOUT(14,13)=0 293
  IOUT(12,IT)=JMAT(9,IT) 294
  IOUT(14,IT)=JMAT(5,IT) 295
  IOUT(12,13)=IOUT(12,13)+IOUT(12,IT) 296
  IOUT(14,13)=IOUT(14,13)+IOUT(14,IT) 297
310 CONTINUE 298
  KWD=KWD+1 299
  CALL AUTOD(JMAT,KMAT(KWD),95,JWDD,KWD) 300
  KWDD=KWD+KWDD-1 301
  IGC=1 302
  WRITE(2) KWDD,IGC,(KMAT(I),I=1,KWDD) 303
  XPA(13)=90. 304
  DO 80 IT=1,13 305
  ISL=9 306
  DO 120 JJ=1,14 307
  ISL=ISL+IOUT(JJ,IT) 308
120 CONTINUE 309
  IF(TSL.GT.0) WRITE(9,2007) XPA(IT),(TOUT(I,IT),I=1,14) 310
  IF(IT.EQ.13.AND.TSL.GT.0) WRITE(6,207) XPA(IT),(IOUT(I,IT), 311
  +I=1,14) 312
*0 CONTINUE 313
2007 FORMAT(1X,F6.1,7(16,I3)) 314
  IF(IEOF.NE.0) GO TO 100 315

```

```

***** 316
C ZERO CONSTANTS FOR NEXT LAT,LONG BOX 316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357
    IDLT=0
30  CONTINUE
    DO 40 II=1,12
    JDA(TI)=0
    DO 40 JJ=1,12
    IPAD1(JJ,II)=0
    IF(JJ.GT.9) GO TO 50
    IPAD2(JJ,II,1)=0
    IPAD2(JJ,II,2)=0
    IPAD2(JJ,II,3)=0
40  CONTINUE
    IFGC=0
    JDA(13)=0
    JDA(14)=0
    JDA(15)=0
    IF(XLT.GT.90.) XLT=XLT-360.
    XLT1=X_T1
    XLG1=XLG4
    ALT1=ALT
    HR=(GMT7+FL)AT(KDAT(1,TT1))*TRAT)/3600.
    CALL TDATB(LTIM,TMA,MON,HR,JD,019)
    ILTL=ILTC
    ILGL=ILG2
    IALL=TALC
    GO TO 90
100 CONTINUE
    WRITE(8,2002) ICT3,ICT4
2002 FORMAT(1X,I5,* RECORDS READ FROM DFILE*/
           +1X,I5,* RECORDS WRITTEN ON EFILE*)
           T2=SECOND(TTT)-T1
           WRITE(8,2003) T2
2003 FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3)
           ENDFILE2
           GO TO 50
110 CONTINUE
           T2=SECOND(TTT)-T1
           WRITE(8,2005) T2
2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S2SAB IS*,F10.3)
           END

```

APP-B- 4 - 88

```

SUBROUTINE AUTO(IIMAT, JMAT, IWD, JWD, K4D) 350
***** 359
* 1976 SUBPROGRAM. E. HOLEMAN. LAST ALTERED 17 OCT 77. 360
* CREATED 4 MAR 76. 361
***** 362
***** 363
***** 364
* FIRST VERSION OF AUTO-PACKING ROUTINE 365
***** 366
***** 367
DIMENSION IIMAT(1), JMAT(1), KMAT(512) 368
DATA ICT4 /3/
XLGK=2.079441541 369
MAXK=-39 370
ICT4=ICT4+1 371
JWD=1 372
KWD=1 373
MAXI=1 374
KWD1=0 375
KSUM=20 376
IF(IWD.LT.0) IWD=0 377
NWPW=20 378
LWD=1 379
IF(IWD.EQ.0) GO TO 50 380
DO 10 II=1,IWD 381
KMAT(II)=20 382
IF((SHIFT(IIMAT(II),-48).AND.777778).NE.0) GO TO 40 383
KMAT(II)=0 384
IF(IIMAT(II).EQ.0) GO TO 10 385
KMAT(II)=ALOG(FLOAT(IIMAT(II)))/XLGK+1. 386
40 CONTINUE 387
IF(KMAT(II).GT.MAXC) MAXI=II 388
IF(KMAT(II).GT.MAXK) MAXK=KMAT(II) 389
KSUM=KSUM+KMAT(II) 390
IF(KSUM.E.20) GO TO 10 391
KSUM=0 392
KSUM=KMAT(II) 393
KWD1=KWD1+1 394
10 CONTINUE 395
IF(MAXK.GT.20) WRITE(6,2001) MAXK 396
***** 397
* ENCODE WORD LOGIC 398
***** 399
IF(MAXK.GT.7) NWPW=10 400
NCPW=60/NWPW 401
JWD1=(IWD-1)/NWPW 402
DO 20 II=1,TWD,NWPW 403
LWD=LWD+1 404
JMAT(LWD)=0 405
ICH=51 406
MWD=MING(II+NWPW-1,TWD) 407
408

```

```

DO 20 JJ=II,MWD          409
ICH=ICH-NCPW             410
JMAT(LWD)=ISBYTX(ICH,NCPW,JMAT(LWD), $\langle$ MAT(JJ) $\rangle$ ) 411
20 CONTINUE               412
JWD=LWD                 413
IF(JWD.NE.JWD1) WRITE(6,2001) ICT4,JWD,JWD1      414
2001 FORMAT(1X,*PROBLEM IN CODING AT*,4I5)        415
KWD1=KWD1+LWD            416
*****                   417
C ENCODE DATA           418
*****                   419
ICH=0                   420
DO 30 II=1,LWD           421
IF(KMAT(II).EQ.0) GO TO 30 422
NCPW=3*KMAT(II)          423
ICH=ICH-NCPW             424
IF(ICH.LE.0) LWD=LWD+1    425
IF(ICH.LE.0) ICH=61-NCPW 426
JMAT(LWD)=ISBYTX(ICH,NCPW,JMAT(LWD),TMAT(II)) 427
30 CONTINUE               428
40 CONTINUE               429
KWD=LWD                 430
IF(KWD.NE.KWD1) WRITE(6,2001) ICT4,JWD,KWD,KWD1 431
JMAT(1)=]                432
JMAT(1)=ISBYTX(46,15,JMAT(1),LWD)                 433
JMAT(1)=ISBYTX(31,15,JMAT(1),NWPW)                434
JMAT(1)=ISBYTX(15,15,JMAT(1),JWD)                 435
JMAT(1)=ISBYTX(1,15,JMAT(1),KWD)                 436
RETURN                  437
END                     438

```

APP-B-5 - 90

PROGRAM S3PABA(AFILE,BFILE,YFILE,OUTPUT=64,	10
+TAPE1=AFILE,TAPE2=BFILE,TAPE3=YFILE,TAPE5=OUTPUT)	11
*****	12
*****	13
C 1976 PROGRAM. T. SPENCER. LAST ALTERED 14 SEP 77	14
C 1976 S3-3 DATA REDUCTION SYSTEM. CREATED 14 JUN 76	15
*****	16
*****	17
C COUNTERS USED	18
C ICK---POSITION OF CURRENT RECORD IN 16 SECOND GROUP	19
C ICK1---POSITION OF CURRENT RECORD IN 8 SECOND GROUP	20
C ISCR---SECONDS OF DATA READ SINCE LAST INPUT RECORD READ	21
C ISCW---COUNTS SECONDS OF DATA TO BE WRITTEN IN CURRENT RECORD	22
C ISCT---SECONDS OF DATA PROCESSED FOR FTLE.	23
C ICT2---COUNTS NUMBER OF FILES PROCESSED.	24
C ICT3---COUNTS NUMBER OF AFILE RECORDS READ FOR FTLE.	25
C ICT4---COUNTS NUMBER OF BFILE RECORDS WRITTEN FOR FTLE.	26
C FLAGS USED	27
C *****	28
C *****	29
C REFORMATS MERN DATA TAPE. NO LISTINGS.	30
C ****	31
C 47200 CM STORAGE REQUIRED FOR LOADING.	32
*****	33
*****	34
*****	35
DIMENSION FHED(30),IHED(30),ICAL(4),JCAL(4),KCAL(6)	36
DIMENSION LABL(3), KDAT (76),LTIM(9),_DAT(4,8)	37
DIMENSION IDAT(25,20),JDAT(20,16),MDAT(12,4)	38
DIMENSION IANA(22),JANA(4,8),KANA(5+),LANA(30)	39
COMMON IANA,JANA	40
EQUIVALENCE(IANA,KANA)	41
EQUIVALENCE(FHED,IHED)	42
EQUIVALENCE(MDAT, KDAT (2))	43
MASKA=SHIFT(1P,45)	44
MASKB=7777777777777777	45
MASKC=777773	46
MASKD=MASKC+1	47
REWIND1	48
REWIND2	49
REWIND8	50
*****	51
C INITIALIZE FILES AND ZERO CONSTANTS	52
*****	53
DO 120 II=1,54	54
KANA(II)=400R	55
120 CONTINUE	56
IWHICH=0	57
ITANA=1	58
2001 FORMAT(14I,5X,*S3-3 PROCESSING BEGUN IN S3PABA*,	59
+2(2X,A10)/5X,*ORBIT ID=*,3A10	60

```

+ /5X,*DATA ACQUISITION INTERVAL=* ,2F10.5,2X,A8)          61
  ADATE=DATE(IDTT)                                         62
  ATIM=TIME(ITIM)                                         63
  ICT2=0                                                    64
  20  CONTINUE                                              65
C******
3  READ FILE HEADER                                         66
C******
      READ(1) KWC,KGC,(FHED(K),K=1,KWC)                   69
      IF(EEOF(1)) 100,10                                     70
  10  CONTINUE                                              71
      ISCT=0                                                 72
      ICT3=0                                                 73
      ICT4=0                                                 74
      LGC=0                                                 75
      ISCW=0                                                 76
      ICT2=ICT2+1                                           77
      KCAL(1)=KCAL(2)=KCAL(3)=KCAL(4)=0                  78
      IHED(30)=5L3FILE                                     79
      ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)       80
  4001 FORMAT(R4,R5,2X,A10,1X,A8)                           81
      HR1=FHED(8)/3600.                                     82
      HR2=FHED(13)/3600.                                    83
      WRITE(8,4001) ITIM, IDTT, LABL, HR1, HR2, IHED(6)    84
      GMT1=FLOAT(IHED(18))/1000.                            85
      TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1.00.           86
      LTIM(1)=1976                                         87
      LTIM(2)=IHED(16)                                      88
      IF(LTIM(2).LT.180) LTIM(1)=1977                      89
      CALL TDATB(LTIM,TMA,MON,HR1,JD,01R)                  90
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT                      91
  2002 FORMAT(* TIME DISCREPANCY*)                         92
C******
3  BEGINNING OF NORMAL READ LOOP...                         93
C******
  200  CONTINUE                                              94
      READ(1) TWC,IGC,((TDAT(I,J),I=1,TWC),J=1,TGC)     95
      IEOF=EOF(1)                                           96
      IF(IEOF.NE.0) GO TO 310                                97
      IF(IWC.GT.25.OR.IGC.GT.20) GO TO 200                 98
      ICT3=ICT3+1                                           99
      ISCR=C
C******
3  BEGINNING OF ONE SECOND PROCESSING.....                100
C******
  210  CONTINUE                                              101
      ISCT=ISCT+1                                           102
      ISCR=ISCR+1                                           103
      DO 40 II=1,76                                         104
      KDAT(II)=0                                            105
  40  CONTINUE                                              106

```

```

*****+
C UNPACK ONE SECOND.                                112
*****+
C*****+
CALL S3UPA(TDAT(1,TSGR),KDAT,ICK2)                113
CALL S2PAL(KDAT(75),L0AT,ICK1)                      114
IF(TSCT.NE.1) GO TO 50                             115
*****+
C BEGINNING OF FILE PROCESSING.                    116
*****+
LWC=TSCH=JWC=0                                      117
INOW=ICK1                                         118
IF(ICK2.GT.0) IN04=ICK2                           119
IREG=KDAT(1)/16-INOW                            120
ILAS=0                                           121
HR=(GMTZ+FLOAT(KDAT(1))*TRAT)/3600.             122
IHED(26)=JD                                     123
FHED(27)=12                                     124
IHED(29)=IBEG                                    125
WRITE(2,KWC,1,(FHED(I),I=1,KWC)                 126
ICK3=MOD(IREG,8)+1                               127
IF(ICK3.NE.ICK1) TREG=IBEG+ICK1-ICK3            128
ICDM=0                                         129
ICAL(1)=ICAL(2)=ICAL(3)=ICAL(4)=1              130
ICKC=ICK_1=KDAT(1)/256                          131
C CONTINUE                                     132
ICKC=KDAT(1)/256                                 133
IF(ICKC.NE.ICK1) GO TO 50                         134
*****+
C TRANSFER ANALOG                                135
*****+
DO 110 IF=1,22                                     136
IIA=II+49                                         137
IF(KYAT(IIA).LT.4)*B) TANA(TI)=KDAT(IIA)        138
110 CONTINUE                                     139
JANA(1,ICK1)=KDAT(72)                           140
JANA(2,ICK1)=KDAT(73)                           141
JANA(3,ICK1)=KDAT(74)                           142
JANA(4,ICK1)=KDAT(75)                           143
*****+
C CHECK FOR TIME GAPS.                            144
*****+
JNOW=KDAT(1)/16                                  145
INOW=JNOW-TREG                                     146
ICK=MOD(JNOW,16)+1                               147
IGAP=TNO4-ILAS                                     148
IF(IGAP.GT.1) ICAL(2)=ICAL(4)=1                  149
ILAS=TNO4                                         150
C 1 IF(IGAP.NE.1) WRITE(6,2003) IGAP,TNO4       151
2003 FORMAT(1X,I3,* SECOND GAP DETECTED AT*,I8)   152
IF(ICK2.LE.0) ICK2=ICK                           153
IF(LGC.NE.0) GO TO 320                           154
*****+

```

```

      LANA(1)=<DAT(1)-15*(TCK-1)                                163
2004 FORMAT(1X,*GAP AT BEGINNING OF MASTER FRAME*,           164
        +* AT*,I5,I3,2T10)                                       165
320 CONTINUE                                                 166
      LGC=LGC+TGAP                                         167
      ISCW=ISCW+1                                           168
*****+
3 CHECK ON LEPS CALIBRATION LOGIC.                           169
*****+
      ICALB=0                                              170
      IIA=0                                              171
      DO 30 II=2,38,12                                     172
      IIA=IIA+1                                         173
      IF(IIA.EQ.1.OR.IIA.EQ.3) KCAL(IIA)=TCAL(IIA+1)       174
      KCAL(IIA)=SHIFT(KDAT(II),-1E)                         175
      IF(IIA.EQ.2.OR.IIA.EQ.4) KCAL(IIA)=TCAL(IIA-1)       176
      JCAL(IIA)=0                                         177
      IF((KDAT(II+2)-4500)*(6500-KDAT(II+2)).GT.0.AND.    178
        +(KDAT(II+2)-KDAT(II+1))*(KDAT(II+2)-KDAT(II+3))  179
        +.GT.0) JCAL(IIA)=1                                 180
      KDAT(II)=KDAT(II).AND.MASKD                         181
30 CONTINUE                                                 182
      KCAL(1)=KCAL(1).AND.JCAL(1)                          183
      KCAL(2)=KCAL(2).AND.JCAL(2)                          184
      KCAL(3)=KCAL(3).AND.JCAL(3)                          185
      KCAL(4)=KCAL(4).AND.JCAL(4)                          186
      ICALB=KCAL(1)*8+KCAL(2)*4+KCAL(3)*2+KCAL(4)        187
      JDAT(1,ISCW)=KDAT(1)+SHIFT(ICALB,45)                188
      IF(KCAL(3).EQ.1.AND.KCAL(4).NE.1) MDAT(1,4)=MDAT(1,4)+MASKD 189
      IF(KCAL(5).EQ.1.AND.KCAL(3).NE.1) MDAT(1,3)=MDAT(1,3)+MASKD 190
      IF(KCAL(1).EQ.1.AND.KCAL(2).NE.1) MDAT(1,2)=MDAT(1,2)+MASKD 191
      IF(KCAL(5).EQ.1.AND.KCAL(1).NE.1) MDAT(1,1)=MDAT(1,1)+MASKD 192
      KCAL(5)=KCAL(2)                                      193
      KCAL(6)=KCAL(4)                                      194
      IF(ICALB.NE.0) WRITE(8,2005) JNOW,TCAL,JCAL,KCAL,TCALB 195
2005 FORMAT(1X,I9,2(1X,4I1),1X,6I1,I5)                      196
*****+
5 SET NOISE TRAP                                         197
*****+
      DO 80 KK=1,4                                         198
      IF(MDAT(1,KK).GE.MASKD) GO TO 130                   199
      IF(ICALB.NE.0) WRITE(8,2006) JNOW,KK,(MDAT(I,KK),I=1,12) 200
      TFGB=0                                              201
      TEST=FLOAT(MDAT(2,KK))/FLOAT(MDAT(3,KK).OR.1B)        202
      IF(TEST.GT.16..AND.MDAT(2,KK).GE.255) GO TO 130       203
      TEST=FLOAT(MDAT(3,<K))/FLOAT(MDAT(2,<K).OR.1B)        204
      IF(TEST.GT.16..AND.MDAT(3,<K).GE.255) GO TO 130       205
      TEST=FLOAT(MDAT(11,KK))/FLOAT(MDAT(12,KK).OR.1B)       206
      IF(TEST.GE.16..AND.MDAT(11,<K).GE.255) GO TO 130       207
      TFST=FLOAT(MDAT(12,KK))/FLOAT(MDAT(11,KK).OR.1B)       208
      IF(TEST.GT.16..AND.MDAT(12,<K).GE.255) GO TO 130       209
      APP-R- 5 - 94

```

```

DO 140 JJ=4,10          214
SUMM=(MDAT(JJ-1,KK)+MDAT(JJ+1,KK))/2 215
IF(SUMM.LE.0.) SUMM=1. 216
TEST=FLOAT(MDAT(JJ,KK))/SUMM 217
IF(TEST.GE.3.5.AND.MDAT(JJ,KK).GE.32) TFGB=1 218
140 CONTINUE 219
IF(TFGB.NE.1) GO TO 80 220
130 CONTINUE 221
IF(MDAT(1,KK).LT.MASKD) MDAT(1,KK)=MDAT(1,KK)+MASKD 222
WRITE(8,2006) JNOW,KK,(MDAT(I,KK),I=1,12) 223
2006 FORMAT(1X,I9,I2,12T8) 224
10 CONTINUE 225
JDAT(2,ISCW)=KDAT(76) 226
CALL AUTOCD(MDAT,JDAT(3,ISCW),48,JCD,ICD) 227
IF(ICD.GT.ICDM) ICDM=ICD 228
IF(TSCR.GE.TGC) GO TO 200 229
GO TO 210 230
50 CONTINUE 231
***** 232
3 RECORD READY TO BE WRITTEN 233
***** 234
IF(ISCW.LE.0) GO TO 90 235
ICT4=ICT4+1 236
JWC=TCDM+2 237
IF(ICD.EQ.ICDM) JWC=JWC+1 238
JDAT(JWC,ISCW)=10H#AT RECORD 239
CALL AUTOCD(KANA,LANA(2),54,JCD,ICD) 240
LWC=TCDM+2 241
LANA(LWC)=10HH#P RECORD 242
WRITE(2) JWC,TSCH,((JDAT(J,I),J=1,JC),I=1,TSCH) 243
WRITE(2) LWC,1,(LANA(I),I=1,LWC) 244
IF(JDAT(1,1).NE.LANA(1)) PRTNT 2004,ICT3,ICT4,LANA(1),
+JDAT(1,1) 245
90 CONTINUE 246
DO 70 II=1,54 247
KANA(II)=400R 248
70 CONTINUE 249
ICDM=0 250
ISCW=0 251
IF(IFOF.NE.0) GO TO 310 252
LGC=0 253
ICKL=ICKC 254
GO TO 60 255
310 CONTINUE 256
***** 257
3 EOF ENCOUNTERED. 258
***** 259
IF(ISCW.NE.0) GO TO 50 260
ENDIFLE2 261
GO TO 20 262
100 CONTINUE 263
                                264

```

C EDI ENCOUNTERED.

END

265
266
267
268

APP-R- 5 - 96

```

SUBROUTINE S3UPA(IDAT,NODAT,IANA) 269
C IDAT FILE TO BE UNPACKED LESS WORD AND GROUP COUNT 270
C NODAT FILE UNPACKED 271
C IANA POSITION IN 16 SEC GROUP 272
C 273
      DIMENSION IDAT(33),NODAT(76),ISCR(22) 274
      COMMON /K/K(60) 275
      DATA ISCR/11,10,3,1,7,6,5,4,3,2,4,3,2,1,16,1,8,7,6,5,3,2/ 276
      IBIT=16 277
      NODAT(1)=IDAT(1) 278
      IWD=13 279
      J=1 280
      DO 5 I=1,60 281
      K(I)=J 282
      5 J=J+1 283
      J=47 284
      DO 10 I=2,46 285
1001 FORMAT(1X,4I4,2716) 286
      J=J-1 287
      II=ISHIFT(IDAT(IWD),-16) 288
      NODAT(J)=IDAT(IWD)-SHIFT(II,16) 289
      IDAT(IWD)=II 290
      IF (I .EQ. 46) GOTO 10 291
      IF (IBIT .GT. 44) GOTO 20 292
      IBIT=IBIT+16 293
10 CONTINUE 294
      GOTO 30 295
20 I=I+1 296
      J=J-1 297
      IBIT=IBIT-44 298
      IWD=IWD-1 299
      II=ISHIFT(IDAT(IWD),-IBIT) 300
      NODAT(J)=(IDAT(IWD)-SHIFT(II,IBIT))***(16-IBIT)+IDAT(IWD+1) 302
      IDAT(IWD)=II 303
      IBIT=IBIT+16 304
      GOTO 10 305
30 II=ISHIFT(IDAT(14),-12) 306
      NODAT(72)=IDAT(14)-SHIFT(II,12) 307
      IDAT(14)=II 308
      DO 40 I=1,3 309
      II=ISHIFT(IDAT(14),-16) 310
      NODAT(50-I)=IDAT(14)-SHIFT(II,16) 311
      IDAT(14)=II 312
      II=ISHIFT(IDAT(17),-12) 313
      NODAT(50)=IDAT(17)-SHIFT(II,12) 314
      IDAT(17)=II 315
      DO 50 I=1,5 316
      II=ISHIFT(IDAT(18),-12) 317
      NODAT(56-I)=IDAT(18)-SHIFT(II,12) 318
      IDAT(18)=II 319
      DO 60 I=1,4

```

	II=ISHIFT(IDAT(17), -12)	320
	NODAT(62-I)=IDAT(17)-SHIFT(II,12)	321
60	IDAT(17)=II	322
	DO 70 I=1,2	323
	II=ISHIFT(IDAT(16), -12)	324
	NODAT(58-I)=IDAT(16)-SHIFT(II,12)	325
70	IDAT(16)=II	326
	DO 80 J=1,2	327
	DO 80 J=1,5	328
	II=ISHIFT(IDAT(18+J), -12)	329
	NODAT(62+5*I-J)=IDAT(18+J)-SHIFT(II,12)	330
	IDAT(18+J)=II	331
80	CONTINUE	332
	II=ISHIFT(IDAT(15), -24)	333
	NODAT(76)=SHIFT((IDAT(15)-SHIFT(II,24)),36)+IDAT(16)	334
	IDAT(15)=II	335
	DO 90 I=1,3	336
	II=ISHIFT(IDAT(15), -12)	337
	NODAT(76-I)=IDAT(15)-SHIFT(II,12)	338
90	IDAT(15)=II	339
	IANA=0	340
	DO 100 I=1,22	341
	IF (NODAT(72-I) .LT. 40000) IANA=ISOR(T)	342
	CONTINUE	343
	RETURN	344
100	END	345

FUNCTION ISHIFT(I,J)	346
COMMON /K/K(60)	347
IF (J .LT. J) GOTO 10	348
ISHIFT=SHIFT(I,J)	349
RETURN	350
10 ISHIFT=SHIFT(I,J) .AND. K(60+J)	351
RETURN	352
END	353

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```

PROGRAM S30MAB(BFILE,CFILE,EMFILE,YFILE,OUTPUT,
+TAPE1=BFILE,TAPE2=CFILE,TAPE4=EMFILE,TAPE8=YFILE,
+TAPE6=OUTPUT)
***** ****
C 1975 PROGRAM. E. HOLEMAN. LAST ALTERATION 29 NOV 76
C 1975 FROM S20MAB 26 JUL 76.
***** *
C IGT1 COUNTS MASTER FRAMES READ
C IGT3 COUNTS SECONDS OF DATA PROCESSED.
***** *
C PROGRAM REQUIRES 56300 CM STORAGE FOR LOADING.
***** *
DIMENSION FHED(30),IHED(30),IDAT(20,16),IANA(61),
+JATT(10,16),IDA(7),LABL(3),IATT(30,3)
EQUIVALENCE(FHED,IHED)
EQUIVALENCE(IANA(5F),IDA)
COMMON/USEX/NMAX,IPRINT,IWHAT,ICOUNT,NPRINT,TECI(5),
+LV(5),ALPHA(5),RET(5),SUBRM(5),WRNUM(5),
+ZIOTA,ICALL
COMMON/D_OUT/RLLV(5),DETLV(5),RLED(5),DLTECI(5),
+ALFLVX(5),ALFLVY(5),ALFLVZ(5),ALPHE(5),ALPHFY(5),
+ALPHZ(5)
COMMON/OJTABLE/PI,THORI,PD,DR,ST,CT,/,MJ
COMMON /TIMERS/ JT(8),IT(8)
COMMON/IOGEOG/OMEGA,THETA,XIOTA,RNM,KLT,XLG,ALT,XLT,
+XLGM
DATA IDAT /320*0/
C
***** *
C INITIALIZE FILES AND DM3 CONSTANTS
***** *
C
MASKB=7777777777777777
IDTT=DATE(A)TT
ITIM=TIME(ATIM)
TG=SECOND(ZZZ)
2011 FORMAT(1H1,4X,*53-3 PROCESSING BEGUN FOR S30MA*,5X,410,
+5X,A10)
MNEMD=5LCFILE
REWIND1
REWIND2
REWIND4
REWIND8
IPRINT=0
IWHT=2
ICOUNT=295
NPRINT=300

```

```

      ICT3=0                                61
*****                                62
C  INITIALIZE USER CONSTANTS          63
*****                                64
C                                65
      NMAX=5                                66
      DO 10 1I=1,NMAX                      67
      LV(1I)=1                                68
      IECT(1I)=0                                69
      WRDNJM(1I)=1.                            70
10    CONTINUE                                71
      SUBFRM(1)=SJBFRM(3)=-3.                  72
      SUBFRM(2)=SJBFRM(4)=5.                  73
      SUBFRM(5)=-7.                            74
      ALPHA(1)=ALPHA(2)=179.67                75
      ALPHA(3)=ALPHA(4)=359.89                76
      ALPHA(5)=359.2                            77
      BETA(1)=BETA(2)=.05                     78
      BETA(3)=BETA(4)=.0                     79
      BETA(5)=0.11                           80
C                                81
*****                                82
C  CHECK EM DECK TIME CONSTANTS.        83
C  READ TAPE FILE HEADER RECORD.       84
*****                                85
C                                86
      IFGA=0                                87
70    CONTINUE                                88
      ICT1=0                                89
      ICT2=0                                90
      ILN=0                                91
      IPG=0                                92
      ICAL_=1                               93
      READ(1) JNC,JGC,(FHED(I),I=1,JNC)
      IF(FOF(1)) 100,90                      94
      IF(FOF(1)) 100,90                      95
100   CONTINUE                                96
      ICT3=0                                97
      WRITE(5,2011) ADTT,ATIM                98
      ENCODE(30,4001,LARL) (THED(I),I=1,3),THED(6)
5001  FORMAT(R4,R5,2X,A10,1X,A8)           100
5005  FORMAT(1H1)
      TMA=0.                                101
      IFGA=0                                102
      CALL OM3(KABORT,KTBORT)                103
      ICALL=TCALL+1                         104
      IT(7)=0                                105
      IF(KABORT.EQ.1) GO TO 110              106
      CALL TDAT3(IT,TMB,MON,HP,JD,08)        107
      TMA=TMB                                108
      WRITE(5,2014) (IT(I),I=1,6)            109
      WRITE(6,2014) (IT(I),I=1,6)            110
                                         111

```

```

2014 FORMAT(5X,* EM TT*FS*,5I5,T8,I10,I4) 112
C***** 113
C CHECK TAPE TIME CONSTANTS 114
C***** 115
      GMT1=FLOAT(IHED(18))/1000. 116
      TRAT=FLOAT(IHED(19))/FLOAT(FHED(20))/1000. 117
      GMTZ=GMT1-FLOAT(IHED(17))*TRAT 118
      IF(IHED(30).NE.5L3FTLE) STOP 119
      IHED(30)=5L3FILE 120
      CALL TDATB(IT,TMA,MON,FHED(27),IHED(26),113) 121
      HR1=FHED(6)/3600. 122
      HR2=FHED(13)/3600. 123
      WRITE(8,2015) (IT(I),I=1,6) 124
      WRITE(6,2015) (IT(I),I=1,6) 125
2015 FORMAT(5X,*TAPE TIMES*,5I5,T8,I10,I4) 126
1001 FORMAT(1A11,7A10,F1E.3,F10.1,5X,A10) 127
70  CONTINUE 128
C***** 129
C READ MASTER FRAME 130
C***** 131
      READ(1) IWC,IGC,((IDAT(I,J),I=1,IWC),J=1,IGC) 132
      IF(ECF(1)) 100,30 133
    70  CONTINUE 134
      READ(1) IWCA,IGCA,((IATT(I,J),I=1,IWCA),J=1,TGCA) 135
      IWCB=IWCA 136
      IGC=IGCA 137
      ICT1=ICT1+1 138
      IF(ICT1.NE.1) GO TO 60 139
      ICT1=0 140
      IF(IATT(1,1).LT.1.E6) IATT(1,1)=IDAT(1,1) 141
      HR=(GMTZ+FLOAT(IATT(1,1))*TRAT)/3600. 142
      CALL TDAT3(IT,TMC,MON,HR,IHED(26),113) 143
      KABORT=KTBORT=0 144
      CALL OM3(KABORT,KTBORT) 145
      IF(KABORT.EQ.1) GO TO 110 146
      IF(KTBORT.EQ.1) GO TO 20 147
      ICALL=ICALL+1 148
      CALL GE0GA(TMC) 149
      FHED(9)=ALT 150
      FHED(11)=XLT 151
      FHED(21)=XIOTA 152
      FHED(22)=OMEGA 153
      FHED(23)=THETA 154
      FHED(24)=XLG 155
      WRITE(2) JWC,JGC,(FHED(I),I=1,JWC) 156
      ICT1=1 157
    80  CONTINUE 158
      IT1=0 159
C***** 160
C DETERMINE ATTITUDES 161
C***** 162

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```

      DO 130 II=1,IGO          163
      DO 140 JJ=1,10           164
      JATT(JJ,II)=0.             165
140  CONTINUE                166
      HR=(CMT2+FLDAT(IDAT(1,II).AND.MASK3)*TPAT)/3600.    167
      IF(HR.LT.4R1.OR.HR.GT.HR2) GO TO 131                  168
      CALL TDATB(IT,TM,MON,HR,IHE1(26),113)                 169
      KABORT=KTBORT=0.               170
      CALL OM3(KABORT,KTBORT)        171
      IF(KABORT.EQ.1) GO TO 110          172
      IF(KTBORT.EQ.1) GO TO 130          173
      II1=II1+1.                   174
      ICALL=ICALLH1                175
      IF(II1.EQ.1) CALL GEOGA(TM)       176
      DO 9 JJ=1,5                  177
      JJ2=2*JJ                     178
      JJ1=JJ2-1.                   179
      JATT(JJ1,II)=RLLV(JJ)*RD*100.+.5      180
      JATT(JJ2,II)=DELT_V(JJ)*RD*100.+.5      181
9   CONTINUE                    182
130  CONTINUE                183
      IF(II1.LE.0) GO TO 160          184
*****                         185
2  SETUP AND PRINT OUT EPHEMERIS INFORMATION          186
*****                         187
      IF(MOD(ICH1,4).NE.1) GO TO 150          188
      ILN=TLN+1                     189
      IF(MOD(ILN,50).NE.1) GO TO 40          190
      IPG=TPG+1                     191
      WRITE(8,2001) HR,MON,ADTT,T0G          192
      WRITE(8,2004) LABL,OMEGA,XI0TA          193
2004 FORMAT(5X,*DR-HIT IT = *,3A10,10X,*SATELLITE PT.*     194
      * ASCESSION = *,F10.3,* INCLINATION = *,F10.3)        195
2001 FORMAT(142//5X,F8.3-3 EPHEMERUS FOR*,F10.4,          196
      +1X,A10,7X,*COMPUTER RUN OF *,A10,7X,*PAGE NO. *,I4)  197
      WRITE(8,2102)                  198
2002 FORMAT(/T25,*GEOCENTRIC*,T60,*GEOMAGNETIC*/      199
      +10X,*TIME*,F20,*LAT*,T30,*LONG*,T30,ALT*,T40,      200
      +*THETA*,T50,*LATM*,T50,*LONM*,T77,*?(K*)*)        201
4   CONTINUE                    202
      RKM=PNM*1.65325              203
      WRITE(8,2003) IT(3),IT(4),IT(5),XLT,XLG,ALT,THETA,      204
      +XLTM,XLM,RCM                205
2003 FORMAT(7X,I2,2I3,F9.3,F10.3,F9.3,5F10.3)          206
150  CONTINUE                207
      TI2=10*T0G                  208
*****                         209
3  WRITE MASTER FRAME OUTPUT          210
*****                         211
      IOA(1)=ALT+.5               212
      IOA(2)=100.*XLTM+.5         213

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```

IDA(3)=100.*XLG+.5          214
IDA(4)=100.*THETA+.5        215
IDA(5)=100.*OMEGA+.5        216
IDA(6)=100.*XLT+.5          217
IDA(7)=100.*XLGM+.5         218
DO 5) IT=1,7                 219
IF(IDA(IT).LT.0) IDA(IT)=IDA(IT)+36000 220
50 CONTINUE                   221
CALL AUTO(IANA,IATT(2,1),LCD,KCD,JCD) 222
CALL AUTO(IANA,IATT(2,1),61,KCD,JCD) 223
IWCA=MAX0((IWCA-2),JCD)+2            224
CALL S2P<3(IATT(1,2),JATT,IT2)       225
ICD=(IT2-1)/3+1                   226
IF(ICD.LT.30) ICD=ICD+1             227
IWCB=MINJ(ICD,30)                 228
IWCB=MAX0(INCB,IWCA)              229
IGCB=(ICD-1)/30+2                230
IF(MOD(ICD,IWCB).EQ.0) IGCB=IGCB+1 231
IATT(IWCB,1)=104HCP RECORD      232
IATT(IWCB,IGCB)=134ATT RECORD   233
160 CONTINUE                   234
KTBORT=0                         235
ICT2=ICT2+1                      236
WRITE(2) IWC,IGC,((IDAT(I,J),I=1,IWC),J=1,IGC) 237
WRITE(2) IWCB,IGC,((IATT(I,J),I=1,IWCB),J=1,IGC) 238
GO TO 20                          239
110 CONTINUE                   240
WRITE(8,201) ICALL               241
IFGA=4                           242
180 CONTINUE                   243
*****                         244
C END OF FILE PROCESSING      245
*****                         246
IFGA=IFGA+1                     247
IF(IFGA.NE.1) GO TO 120        248
ENDFILE2                         249
CALL CONNEC(6)                  250
WRITE(8,2009) ICT1,ICT2        251
WRITE(6,2009) ICT1,ICT2        252
120 CONTINUE                   253
IF(IFGA.LT.3) GO TO 70        254
WRITE(8,2009)                  255
WRITE(6,2009)                  256
2008 FORMAT(2X,*END OF FILE ON S30MAB,*
+/,1X,15* FILES READ FROM BFILE*,/1X,15* FILES WRITTEN TO CFILE*) 257
TTT=SECOND(ZZZ)-T                259
WRITE(6,2009) TTT                260
WRITE(6,2009) TTT                261
CALL DISCON(6)                  262
2009 FORMAT(2X,*TOTAL PROCESSING TIME FOR S30MAB TS*,F10.3) 263
2010 FORMAT(2X,*JOB IS BEING ABORTED BY CARBRT AFTER CALL NC*,[5]) 264

```

END

265

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SUBROUTINE OM3(KABORT,KTBORT) 266
 C 267
 **** 268
 C 269
 C 1975 SUBPROGRAM E. HOLEMAN. LAST ALTERATION 28 JUL 76 270
 C 1975 S3-2 DATA REDUCTION SYSTEM. FROM FC VERSION 74274 271
 C 1975 15 DEC 75 272
 C 273
 C MAIN SUBROUTINE OF OUTPUT MODULE VERSION 74091 274
 C E1 MODIFICATION VERSION 74274 275
 C E2 MODIFICATION VERSION 75345 276
 C 277
 C **** 278
 C 279
 REAL IOTA,MU 280
 DIMENSION LV(5),IECI(5),DT(5),
 * CNU(16,3),CPHI(16,3),CPSE(16,3), 281
 * TR1(3),TR2(3),TRNU(3),TTA(3),TOME(3), 282
 * SUBFRM(5),WRDNUM(5),ALPH1(5),BETA(5), 283
 * ALPH1(5),XP(5),YP(5),ZP(5),ADJM(8) 284
 DIMENSION RANGE(3) 285
 DIMENSION SEC(30),XC(30),YC(30),ZC(30),DXC(30),DYC(30),DZC(30)
 DIMENSION TLIMIT(30),DENOM(70),FACTDP(50),R0(30),R10(30),RNC(30),
 CAC(30),S10(30),CT0(30),HXY0(30),THETAO(70) 286
 DIMENSION OMEGA0(30),DOMEG0(30) 287
 REAL IOTA0(30) 288
 COMMON/TIMERS/JTIMEE,JTIMEU 289
 COMMON/JSER/NMAX,IPRINT,INHAT,ICOUNT,NPRINT,IECT,
 * LV,ALPHA,BETA,SUBFRM,WRDNUM,XIOTA,ICALL 290
 COMMON/TOGEOM/OMEG,Thet,XIOT,R0,AXLT,AXLG,AALT,XLTM,XLGM 291
 DIMENSION JTIMEU(8),JTIMEF(8),JTIMEP(8) 292
 COMMON/OJTALL/PI,TROPI,PD,DR,SI,GT,C,MI 293
 COMMON/SPIN/OMEGAS 294
 COMMON/DHNWTN/XZ,YZ,ZZ,XDZ,YDZ,ZDZ,LEN,FAC,RV,EN,A,IOTA,HXY,
 C OMEGAZ,OMEGDT,R7 295
 COMMON/OUTOJT/ X,Y,Z,XD,YD,ZD,P,THETA 296
 COMMON/OUTNWT/EPS_NN,ITER_NN 297
 COMMON/OJTDL/SP,CP,SS,CS,ST,CT,RNU,OMEGA,PHIC,PSIG,PHIM,PSHM,J
 COMMON/OLOUT/RLLV(5),DETLV(5),RLFCI(5),DLTECI(5), 298
 * ALFLVX(5),ALFLVY(5),ALFLVZ(5), 299
 * ALPHEX(5),ALPHEY(5),ALPHEZ(5) 300
 DATA TOFF/50./ 301
 DALFA = 1.0 302
 JT = 1 303
 KTBORT=0 304
 ICTEM=0 305
 IF(ICALL.NE.1) GO TO 51 306
 DO 110 II=1,8 307
 JTIMEE(II)=0 308
 JTIMEU(II)=0 309
 JTIMEP(II)=0 310
 311
 312
 313
 314
 315
 316

110 CONTINUE	317
*****	318
C ZERO ERROR CONTROL CONSTANTS.	319
*****	320
KART=500	321
LART=600	322
KCOUNT=0	323
EPSLMN = .000000001	324
ITERPN = 25	325
PRINT 1041	326
1041 FORMAT(20H10OUTPUT MODULE - OM3)	327
PI=3.14159265358979	328
TWOPI = 2.*PI	329
RD = 180./PI	330
DP = PI/180.	331
C110:1MU=1407645000000000.LC.	332
C=6076.1155	333
0	334
MU=1.407645E16	335
0 READ ALL DATA REQUIRED FOR THE OUTPUT MODULE.	336
0 NOTATION...	337
0 INPUT DATA SUPPLIED BY EXPERIMENTER--	338
0 NMAX = NUMBER OF EXPERIMENTER WORDS FOR WHICH ATTITUDE	
0 OR EPHEMERIS IS REQUIRED.	340
0 LV(I) = 1 IF LOCAL-VERTICAL ATTITUDE FOR WORD I IS	
0 REQUIRED,	342
0 = 0 OTHERWISE.	343
0 TECI(I) = 1 IF ECI ATTITUDE FOR WORD I IS REQUIRED,	
0 = 0 OTHERWISE.	345
0 TPRINT = PRINTOUT FREQUENCY CONTROL	
0 -1 = NEVER	347
0 0 = EVERY NPRINTNTH CALL	348
0 1 = EVERY CALL	349
0 INHAT = CONTROL FOR DIRECTION COSTNES AND/OR	350
0 RT. ASCENSION AND DECLINATION OUTPUT	351
0 IWHAT = 1 - DIR COS ONLY	352
0 IWHAT = 2 - LAMBDA AND DELTA ONLY	353
0 IWHAT = 3 - BOTH	354
0 SURFM(I) = IDENTIFIER OF SUBFRAME IN MAIN FRAME FOR	
0 WORD I.	356
0 WRNUM(I) = IDENTIFIER OF WORD NUMBER I IN SUBFRAME.	
0 ALPHA(I) = FIRST EULER ANGLE DEFINING ATTITUDE OF	
0 EXPERIMENTER'S EARTH SENSOR W.R.T. SATELLITE	
0 BODY AXES.	360
0 BETA(I) = SECOND EULER ANGLE.	361
0 INPUT DATA FROM ESTIMATION MODULE--	362
0 NCNU = NUMBER OF COEFFICIENTS FOR CURVE FIT OF NU.	
0 NCPH = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PHIM.	
0 NCPS = NUMBER OF COEFFICIENTS FOR CURVE FIT OF PSIM.	
0 CNJ = COEFFICIENTS OF CURVE FIT FOR NU.	366
0 CPAT = COEFFICIENTS OF CURVE FIT FOR PHIM.	367

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C      CPSI = COEFFICIENTS OF CURVE FIT FOR PSIM.      368
C      RNJAVG = AVERAGE OF ALL VALUES OF NU.          369
C      TVAVG = AVERAGE OF ALL TIMES THAT HORIZON SENSOR
C                  LINE OF SIGHT IS ALONG VERTICAL.        371
C      OMEGAS = AVERAGE SPIN RATE                      372
C      TZ     = TIME AT WHICH INITIAL EPHEMERIS DATA APPLES 373
C
C      PRINT 1030                                         374
1030 FORMAT(//1H ,29HDATA SUPPLIED BY EXPERIMENTER //) 375
C
C      READ THE EXPERIMENTER'S DATA.                   376
C
C      PRINT 1220, (JTIME(I),I=1,5)                   377
1220 FORMAT(1X,4HYEAR,T5,4X,3HDAY,I4,4X,+HHOUR,T3,4X,6HMINUTE,I3,4X,
C      C 74SECONDS,I13)                                378
C:1031 READ(5      ,1200) NMAX, IPRINT, IWHIT      379
1200 FORMAT(3I2)
      IF(IPRINT.GT.0) NPRINT=IPRINT
      IATD=0
      DO 15 I = 1, NMAX
C:1031 READ(5      ,1010) LV(I), IECI(I), SUBFRM(I), WRONUM(I),
C:1031*      ALPHA(I), BETA(I)
1010 FORMAT(2I2,6X4E10.0)
      IATT=IATD + IABS(LV(I)) + IABS(IECI(I))
      PRINT 1510, LV(I), IECI(I), SUBFRM(I), WRONUM(I),
      *ALPHA(I) , BETA(I)
1510 FORMAT(1X,3HLV   , I1, 2X,4HECI   , I1, 15X,
      *      3X,7HSUBFRM   , F4.0, 3X,7HW2NFM   , F5.0, 3X,6HALPHA
      *      E7.3, 3X,5Hbeta   , F7.3)                 394
      *      395
      *      396
      *      397
C      CORRECT FOR THE LOCATION OF THE WORD IN THE DATA FRAME. 398
C
C      DT(I) = ((SUBFRM(I)-1.)*62.5 + (WRONUM(I)-1.)*.49828125)/1000. 399
15  CONTINUE                                         401
C
C      **** READ THE ESTIMATION MODULE DATA.           402
C      THIS INPUT BLOCK PUNCHED FROM THE E.M. PROGRAM 403
C      READ IN THE EPHEMERIDES FROM EM               404
C
C      PRINT 119                                         405
119 FORMAT(//1X,34HDATA SUPPLIED BY ESTIMATION MODULE//) 406
C
C      KARSO = 1                                       407
50  CONTINUE                                         408
      READ(4,1001) ADJM                           409
1001 FORMAT(8A1C1)
1100 FORMAT(6X,I4,8X,I3,9X,T2,11X,I2,10X,T2,21X,T2)
      IF(EOF(4)) 560,50                           410
50  CONTINUE                                         411
      DECODE(8J,4001,ADJM*) KARDN                412
C

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4001 FORMAT(78X,T2) 419
  IITEM=IITEM+1
  IF(IITEM.GT.50) GO TO 660 420
  IF(KARDN.NE.1) GO TO 50 421
  DECODE(80,1100,ADUR) (JTIMEE(I),I=1,4),NVECT,KARDN 422
  IITEM=0 423
  JTIMEE(5)=0 424
  JTIMEE(6)=0 425
  PRINT 1220, (JTIMEE(I),I=1,6) 426
  CALL TDAT3(JTIMEE,TIMM,MON,HR,JN,08) 427
  JTIMEU(1)=JTIMEE(1) 428
  JTIMEU(2)=JTIMEE(2) 429
  JTIMEU(3)=JTIMEE(3) 430
  JTIMEU(4)=JTIMEE(4) 431
  JTIMEU(5)=JTIMEE(5) 432
  JTIMEU(6)=JTIMEE(6) 433
  JTIMEU(7)=JTIMEE(7) 434
  JTIMEU(8)=JTIMEE(8)=0 435
  DO 21 JJ = 1,NVECT 436
  KARDSQ = KARDSQ + 1 437
  READ(4,1110) SEC(JJ),X0(JJ),Y0(JJ),Z0(JJ),KARDN 438
  TF(KARDSQ).NE. KARDN) GO TO 660 439
  KARDSQ = KARDSQ + 1 440
  READ(4,1120) DX0(JJ),DY0(JJ),DZ0(JJ),KARDN 441
  IF(KARDSQ .NE. KARDN) GO TO 660 442
  PRINT 613, SEC(JJ),X0(JJ),Y0(JJ),Z0(JJ) 443
  PRINT 615, DX0(JJ),DY0(JJ),DZ0(JJ) 444
  PRINT 615, DX0(JJ),DY0(JJ),DZ0(JJ) 445
  F10 FORMAT(4F SEC,F17.6,4X,X,F17.6,4H Y,F17.6,4H Z,F17.6)
  F15 FORMAT( 17Y,4H X0,F17.9,4H Y0,F17.9,4H Z0,F17.9)
  1110 FORMAT(4X,F13.6,4X,F16.6,4Y,F16.6,4K,F16.6,1X,I2) 446
  1120 FORMAT( 21X,F16.9,4Y,F16.9,4K,F16.9,1X,I2) 447
  21 CONTINUE 448
  KARDSQ = KARDSQ + 1 449
  READ(4,1125) TLFIRST,TTLAST,KARDN 450
  IF(KARDSQ .NE. KARDN) GO TO 660 451
  1125 FORMAT(23X,F13.6,3X,F13.6,25X,I2) 452
  C 453
  C DETERMINE ORBITAL PARAMETERS FOR EACH STATE VECTOR 454
  C 455
  PRINT 1041 456
  DO 620 JJ=1,NVECT 457
  CALL OPRT(X0(JJ),Y0(JJ),Z0(JJ),DX0(JJ),DY0(JJ),DZ0(JJ),DENOM(JJ), 458
  CFACTOR(JJ),R0(JJ),RV0(JJ),RNG(JJ),A0(JJ),SIC(JJ),CFC(JJ), 459
  STOTAC(JJ),HXYC(JJ),THETAC(JJ),OMEGA1(JJ),DOMEGOC(JJ),JJ,SEC(JJ)) 460
  620 CONTINUE 461
  C 462
  C COMPUTE EPHEMERIS ZONE BOUNDARIES 463
  NMTNZS = NVECT - 1 464
  IF(NVECT .EQ. 1) GO TO 605 465
  DO 630 IJ = 1,NMINUS 466

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      TLIMIT(IJ) = 0.5*(SEC(IJ) + SEC(IJ+1))          470
      PRINT 645, IJ,TLIMIT(IJ)                          471
500  CONTINUE                                         472
605  TLIMIT(NVECT) = TTLAST                         473
      KNDX = 0                                         474
      645  FORMAT(10X,7HTLIMIT(,I2,3H) =,E21.9)        475
?
?
?
      KARDSQ = KARDSQ + 1                            476
      READ(4,800)  IC,NOC,IPRD,TIM1,TIM2,K12DN       478
      IF (KARDSQ .NE. KARDN) GO TO 660               479
      DO 61  I=1,NDC                                480
      IF (I .EQ. 1) GO TO 777                         481
      KARDSQ = KARDSQ + 1                            482
      READ (4,800) III,JJJ,KKK,TIM1,TIM2,KARDN      483
      IF (KARDSQ .NE. KARDN) GO TO 660               484
777  TR1(I) = TIM1                                 485
      TR2(I) = TIM2                                 486
      RANGE(I) = TIM2 - TIM1                         487
      KARDSQ = KARDSQ + 1                            488
      READ (4,801) TRNUC(I),TTVA(I),TOME(I),KARDN   489
      IF (KARDSQ .NE. KARDN) GO TO 660               490
      JH = 0                                         491
62   JL = JH + 1                                 492
      JH = JH + 3                                 493
      IF (JL.GT.IPRD) GO TO 63                      494
      KARDSQ = KARDSQ + 1                            495
      READ (4,802) (CNJ(J,I),J=JL,JH),KARTN        496
      IF (KARDSQ .NE. KARDN) GO TO 660               497
      GO TO 62                                     498
57   JH = 0                                         499
64   JL = JH + 1                                 500
      JH = JH + 3                                 501
      IF (JL.GT.IPRD) GO TO 65                      502
      KARDSQ = KARDSQ + 1                            503
      READ (4,802) (CPhi(J,I), J=JL,JH),K12DN       504
      IF (KARDSQ .NE. KARDN) GO TO 660               505
      GO TO 64                                     506
65   JH = 0                                         507
66   JL = JH + 1                                 508
      JH = JH + 3                                 509
      IF (JL.GT.IPRD) GO TO 67                      510
      KARDSQ = KARDSQ + 1                            511
      READ (4,802) (CPSI(J,I), J=JL,JH),KARDN       512
      IF (KARDSQ .NE. KARDN) GO TO 660               513
      GO TO 66                                     514
67   CONTINUE                                         515
61   CONTINUE                                         516
      KARDSQ = KARDSQ + 1                            517
      READ(4,805) ETA1D,ETA2D,KARDN                518
                                                519
                                                520

```

```

IF(KARDN .NE. KARDSD) GO TO 660
800 FORMAT(5X,I1,4X,I1,9X,I2,5X,F14.5,5X,F14.6,18X,I2)
811 FORMAT(3X,F17.10,5X,F17.10,5X,F17.10,14X,I2)
832 FORMAT(8X,E17.10,8X,E17.10,8X,E17.10,3X,I2)
845 FORMAT(7X,F12.5,8X,F12.5,38X,I3)

CALL DFS2(CNU,CPHT,CPSI,NOC,TORD)
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571

660 CONTINUE
WRITE(6,680) KARDSD,KARDN
680 FORMAT(21H SEQUENCE ERROR, CARD,I3,17H CONTAINED NUMBER,I3//)
78 KAROPT=1
RETURN
39 CONTINUE
      FIND THE SINES AND COSINES OF THE INVARIANT ANGLE ETA.
ETA = ETA1D * DR
ETA2 = ETA2D * DR
SE2 = SIN(ETA2)
CE2 = COS(ETA2)
SE = SIN(ETA)
CE = COS(ETA)

PERFORM THE PRELIMINARY TRANSFORMATIONS CORRESPONDING TO
THE INVARIANT ANGLES ALPHA, BETA, AND ETA
546
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571

DO 41 I = 1,NMAX
ALPH1(I) = ALPHA(I) + DALFA
CA = COS(ALPH1(I)*DR)
SA = SIN(ALPH1(I)*DR)
DR = COS(BETAK(T)*DR)
SB = SIN(BETAK(T)*DR)
XP(T) = CA*CB*CE2 - SE2*(SE*SA*DR + CE*SR)
YP(T) = (SE*SA*DR + CE*SB)*CE2 + CB*CA*SE2
ZP(T) = -CE*SA*CB + SE*SB
41 CONTINUE
NPP IS NUMBER OF PRINT BLOCKS PER PAGE
559
560
561
562
563
564
565
566
567
568
569
570
571

IF(PRINTOUT .NOT. DESTRED) SKIP THIS SECTION
KDNOM = 0
IF(IPRINT .LT. 0) GO TO 650
KCOORD = 0
DO 661 KK = 1,NMAX
KCOORD = KCOORD + TCSI(KK) + LV(KK)
661 CONTINUE
IF(KCOORD .EQ. 0) GO TO 655
KWHAT = 1
IF(IWHAT .EQ. 0) KWHAT = 2
KDNOM = KCOORD*KWHAT + NMAX + 3
655 CONTINUE

```

```

C      FOR POSITION                                572
      KDENOM = KDENOM + 3                          573
      NBP = 54/KDENOM                            574
      IF(NBP .EQ. 0) NBP = 1                      575
150  CONTINUE                                     576
      NB=NBP                                       577
      RETURN                                       578
      51 CONTINUE                                  579
*****                                         580
*****                                         581
2  NORMAL ENTRY POINT TO SUBPROGRAM.           582
*****                                         583
*****                                         584
      S      =      FLOAT(JTIMEU(7) - JTIMEF(7))    585
      C      +      FLOAT(JTIMEU(6) - JTIMEF(6))/1000000. 586
      IF((TLFRST-S)*(S-TTLAST)) 53,52,52          587
      53 CONTINUE                                  588
      PRINT 1004, TLFRST,S,TTLAST                589
1514 FORMAT(1X,3E20.14)                         590
      IF(KCOUNT.LT.30) PRINT 1510, ICALL          591
1510 FORMAT(42H TIME OF CALL OUTSIDE RANGE OF ESTIMATE ,I10) 592
      KCOUNT=KCOUNT+1                           593
      KTHORT=1                                    594
      IF(KCOUNT.GE.KART) GO TO 555              595
      RETURN                                      596
      52 CONTINUE                                  597
      IF(NVECT .EQ. 1) GO TO 635                598
      00 625 IJ = 1,NMTNJS                      599
      IF(S - TLIMIT(IJ)) 630,630,F25            600
525  CONTINUE                                     601
535  IJ = NVECT                                   602
530  CONTINUE                                     603
      IF(KNDX .EQ. IJ) GO TO 640                604
      THETA = THETAO(IJ)                         605
      XZ = X0(IJ)                                 606
      YZ = Y0(IJ)                                 607
      ZZ = Z0(IJ)                                 608
      X0Z = DX0(IJ)                             609
      Y0Z = DY0(IJ)                             610
      Z0Z = DZ0(IJ)                             611
      DEN = DENOM(IJ)                           612
      FAC = FACTOR(IJ)                          613
      RV = RV0(IJ)                               614
      RN = RNO(IJ)                               615
      A = AO(IJ)                                 616
      SI = SI0(IJ)                               617
      CI = CI0(IJ)                               618
      HXY = HXY0(IJ)                            619
      IOTA=IOTA0(IJ)                           620
      OMEGA7 = OMEGA0(IJ)                        621
                                              622

```

```

    OMEGOT = OMEGOT(IJ)          523
    RZ = RG(IJ)                  524
    KNOX = IJ                     525
    540 CONTINUE                 526
    527
    528
    START OF MAIN LOOP          529
    530
    TDEL=S-SEC(IJ)               531
    OMEGA=OMEGAZ+OMEGOT*TDEL     532
    OMEGA=OMEGA*RD               533
    CALL NWTR(TDEL,KABORT),RETURNS(38) 534
    THE T=THETA*RD               535
    XIOT=ATAN2(SI,CI)*RD        536
    RR=R
    537
    J = 1                         538
    539
    CORRECT THE TIME FOR LOCATION IN MATN FRAME. 540
    541
    TS = DT(I) + S              542
    543
    FIND THE TIME FROM THE INITIAL TIME OF EPHemeris ACQUISITION. 544
    545
    TDELT = TS - SEC(IJ)         546
    547
    UPDATE OMEGA.                548
    549
    OMEGA = OMEGAZ + OMEGOT*TDELT 550
    OMEGA= OMEGA*RD               551
    552
    COMPUTE PRESENT VALUES OF EPHemeris. 553
    554
    CALL NWTR(TDELT,KABORT),RETURNS(38) 555
    556
    UPDATE THETA                 557
    558
    THE TA0 = THETA*RD           559
    560
    TF(J .GT. NMAX) GO TO 5      561
    562
    IF NO ATTITUDE IS REQUIRED, GO TO 100 563
    564
    IF(LV(J) + IFCI(J)) 100, 100, 5 565
    566
    567
    CONTINUE                      568
    569
    ATTITUDE IS REQUIRED. FIND THE VALUE OF TIME FOR THE CURVE FIT. 570
    571
    JZ = 1                         572
    IF (MOD.EQ.1) GO TO 58        573

```

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      IF (TS.GT.TR1(2).AND.TS.LE.TR2(2)) J7 = 2          674
      IF (NOC.EQ.2) GO TO 68          675
      IF (TS.GT.TR1(3).AND.TS.LE.TR2(3)) J7 = 3          676
5* CONTINUE          677
      RNUAVG = TRNU(J7)          678
      TVAVG = TTVA(J7)          679
      OMEGAS = TOME(J7)          680
C      FIND PHIM, PSIM, AND THE DECIMAL PART OF NU          681
C          682
C          683
      TSS = TS - TVAVG          684
      CALL FIT(PHIMD,RANGE(J7),CPHI(1,J7),TODD,TSS)          685
      CALL FIT(PSIMD,RANGE(J7),CPSI(1,J7),TODD,TSS)          686
      CALL FIT(DECNU,RANGE(J7),CNJ(1,J7),TODD,TSS)          687
      PHIM = PHIMD*DR          688
      PSIM = PSIMD*DR          689
C          690
C          691
C          692
C          693
      PNU = OMEGAS * (TS- TVAVG) / TWOPI + RNUAVG + 0.5          694
      INU = RNJ          695
      FINU = INU          696
      RNUREV = RNJ - FINU - DECNU          697
768F CONTINUE          698
      IF (RNUREV .GE. 1.0) RNUREV = RNUREV - 1.0          699
      IF (RNUREV .LT. 0.0) RNUREV = RNUREV + 1.0          700
      IF (RNUREV .GE. 1.0) GO TO 7695          701
      IF (PNUREV .LT. 0.0) GO TO 7695          702
C          703
C          704
C          705
      RNU = RNUREV*TWOPI          706
C          707
C          708
      RNUdeg = RNUREV*360.          709
C          710
C          711
C          712
C          713
C          714
      COMPUTE TRIG FUNCTIONS OF ANGLES FOR LAMDEL
      CTHETA = COS(THETA)
      CT = CTHETA
      STHETA = SIN(THETA)
      ST = STHETA
      CPHM = COS(PHIM)
      SPIM = SIN(PSIM)
      SPHIM = SIN(PHIM)
      CPSIM = COS(PSIM)
C          715
C          716
C          717
C          718
C          719
C          720
C          721
C          722
C          723
C          724
      FIND PHI AND PSI IN LOCAL-VERTICAL COORDINATES (PHIC AND PSIC).

```

```

?
SS = SPSEM*CT - SPHTM*ST*CRSEM 725
PSI0 = ASIN(SS) 726
CS = COS(PSI0) 727
TOP = ST*SPSIM + CPSIM*CT*SPSIM 728
BOT = CPSIM*CPSEM 729
PHIC = ATAN(TOP/BOT) 730
TF(BOT) 10,11,11 731
TF(BOT) 10,11,11 732
10 PHI0 = PHIC + PI 733
GO TO 13 734
11 IF(TOP) 12,13,13 735
12 PHI0 = PHI0 + TWT 736
13 CONTINUE 737
SP = SIN(PHI0) 738
CR = COS(PHI0) 739
PHID = PHI0*RD 740
PSID = PSI0*RD 741
IF(J .GE. NMAX) GO TO 200 742
743
3 FIND THE RIGHT ASCENSION AND DECLINATION OF THE EXPERIMENTER'S
3 SENSOR IN ECI AND/OR LOCAL-VERTICAL COORDINATES. 744
3
3 CALL LAMDEL(XP(J),YP(J),ZP(J),LV(J),FECI(J)) 745
3
3 101 J = J + 1 746
3
3 IF THIS IS THE EXPERIMENTER'S LAST WORD IN MAIN FRAME, PRINT
3 01T THE RESULTS - IF REQUIRED 747
3 IF(J .LE. NMAX) GO TO 3 748
3 TS = S 749
3 GO TO 4 750
3
3 200 CONTINUE 751
3
3 SEE IF THE RESULTS ARE TO BE PRINTED 752
3 IF(IPRINT)500,300,300 753
301 IF(ICOUNT = NPRINT) 325, 350, 350 754
325 ICOUNT = TCOUNT + 1 755
3 GO TO 500 756
350 ICOUNT = 1 757
3
3 OUTPUT IS REQUIRED AT THIS STEP 758
3 NB=N+1 759
3 IF(NP.LE.NB) GO TO 1 760
3 PRINT 1041 761
3 NB = 1 762
1 PRINT 1042 763
PRINT 1042 764
1042 FORMAT(1X)
JTIMEP(7) = JTIMEJ(7) 765
JTIMEP(8) = JTIMEJ(6) 766

```

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CALL TDATB(JTIME0, JTM, MON, HR, JD, 443)          776
SECGMT = FLOAT(JTIMEP(5)) + FLCAT(JFTM-P(6))/1000000. 777
PRINT 1220, (JTIMEP(J), J=1,4), SECGMT            778
PRINT 1040, THETAD, OMEGAD, S, X, Y, Z, X1, Y1, Z1, R 779
1040 FORMAT(1X10HTHETA      ,F15.6,5X,           10HOMEGL ,E15.6,5X,
*             10HTIME      ,E15.6,/, 1X,           10HY       ,F15.6,5X,
*             10HY       ,E15.6,5X,           10HZ       ,F15.6,/
*             1X,10HXD      ,E15.6,5X,           10HYD     ,E15.6,5X,
*             10HZD      ,E15.6,/, 1X,           10HP       ,F15.6,/
IF(IATTD .LE. 0) GO TO 415                         785
PRINT 1050, PHIMD, PHICD, RNUDEG, PSIMD, PSIDN      786
1050 FORMAT(1X,10HPHIM      ,E15.6,5X,           10HPHIO   ,E15.6,5X,
*             10HNJ      ,E15.6,/, 1X,           10HPSIM   ,F15.6,5X,
*             10HPSTD     ,E15.6)                  789
415 CONTINUE                                         790
DO 30 JJ=1,NMAX                                     791
IF(LV(JJ)+IEGI(JJ)) 30, 30, 20                   792
***NOTATION**                                     793
                                                 794
ALFLVX, ALFLVY, AND ALFLVZ ARE THE DIRECTION COSINES IN
THE LOCAL VERTICAL COORDINATE SYSTEM               795
                                                 797
ALPHEX, ALPHAY, AND ALPHAZ ARE THE DIRECTION COSINES IN
THE EARTH-CENTERED-COORDINATES SYSTEM             799
                                                 800
20 CONTINUE                                         801
IWORD = WRONUM(JJ)                                802
ISUB = SUBFRM(JJ)                                 803
PRINT 1140, IWORD, ISUB                           804
1140 FORMAT(1/10X2SHATTITUDE FOR WORD NUMBER , T3,13H OF SUBFRAME , T3)
IF(LV(JJ)) 44, 44, 22                           806
22 CONTINUE                                         807
IF(IWHAT - 2) 41, 42, 43                         808
41 CONTINUE                                         809
                                                 810
ONLY DIRECTION COSINES ARE DESIRED - IN LV COORDS. 811
PRINT 1170, ALFLVX(JJ), ALFLVY(JJ), ALFLVZ(JJ)    812
1170 FORMAT(2X10HALPHA X LV E15.8,3X10HALPHA Y LV F16.8,
X 3X10HALPHA Z LV E15.8)                        813
GO TO 44                                         814
43 CONTINUE                                         815
                                                 816
BOTH DIRECTION COSINES AND RT. ASC. AND DECLIN. ARE DESIRED-LV
PRINT 1170, ALFLVX(JJ), ALFLVY(JJ), ALFLVZ(JJ)    819
42 CONTINUE                                         820
RLLVD = RLLV(JJ)*RD                            821
DLTLVD = DELTLV(JJ)*RD                          822
PRINT 1150, RLLVD, DLTLDV                      823
1150 FORMAT(10X,10HLLMDA LV ,F15.6,5X, 10HDELTA LV ,E15.6) 824
44 CONTINUE                                         825
27 IF(IFCI(JJ).LE.0) GO TO 70                     826

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IF(TWHAT = 2) 45, 47, 48          827
45 CONTINUE
C      ONLY DIRECTION COSINES ARE DESIRED - IN FCI COORDS.    828
      PRINT 1130, ALPHEX(JJ),ALPHFY(JJ),ALPHEZ(JJ)           829
1130 FORMAT(2X,10HALPHAX FCI E16.8,3X10HA_PHAY ECT E16.8,
           X 7X10HALPHAZ ECT E16.8)                         830
           GO TO 49                                         831
48 CONTINUE
C      BOTH DIRECTION COSINES AND RT. ANG. AND DECLIN. ARE DESIRED-FCI   832
      PRINT 1130, ALPHEX(JJ),ALPHFY(JJ),ALPHEZ(JJ)           833
47 CONTINUE
      RLECD = PLECT(JJ)*RD                                     834
      RTECD = DLTECI(JJ)*RD                                    835
      PRINT 1160, RLECD,RTECD                                836
1160 FORMAT(10X,10HLLAMDA ECT ,F15.6,5X,10HDELTA FCI ,F15.6) 837
49 CONTINUE
50 CONTINUE
      GO TO 501                                         838
555 CONTINUE
      KAPORT=1                                         839
      IF(KCOUNT.LT.LABT) PRINT 2001,KCOUNT,KABT             840
      IF(MOD(KCOUNT,100).EQ.0) PRINT 2001,KCOUNT,KABT         841
2001 FORMAT(2X,"COUNT",TF," KABT*",15)                   842
555 CONTINUE
      J = NMAX
      RETURN
      END

```

```

SUBROUTINE AUTOCTMAT, JMAT, IWD, JWD, K4D)
854
C#*****#
855
C 1976 SUBPROGRAM. E. HOLEMAN. LAST ALTERED 12 JUL 77.
856
C CREATED 9 MAR 76.
857
C*****#
858
C FIRST VERSION OF AUTO-UNPACKING ROU
859
C*****#
860
C*****#
861
DIMENSION TMAT(1), JMAT(1), KMAT(512)
862
DATA ICT1,ICT2,KCF2 /3*0/
863
ICT1=ICT1+1
864
IWD=LBYTX(46,15,JMAT(1))
865
NWPW=LBYTX(31,15,JMAT(1))
866
JWD=LBYTX(16,15,JMAT(1))
867
KWD=LBYTX(1,15,JMAT(1))
868
IF(IWD.LT.1.0R.IWD.GT.512) GO TO 40
869
IF(NWPW.NE.10.AND.NWPW.NE.20) GO TO 40
870
IF(K4D.GT.512.0R.JWD.GT.512) GO TO 40
871
IF(JWD.EQ.0.0R.KWD.EQ.0) GO TO 40
872
C*****#
873
C DECODE WORD LOGIC
874
C*****#
875
DO 10 II=1,IWD
876
IMAT(II)=0
877
10 CONTINUE
878
LWD=1
879
NCPW=60/NWPW
880
DO 20 II=1,IWD,NCPW
881
LWD=LWD+1
882
ICH=51
883
MWD=II+NCPW-1
884
DO 20 JJ=II,MWD
885
ICH=ICH-NCPW
886
KMAT(JJ)=LBYTX(ICH,NCPW,JMAT(LWD))
887
20 CONTINUE
888
IF(LWD.NE.JWD) GO TO 40
889
C*****#
890
C DECODE DATA
891
C*****#
892
ICH=0
893
DO 30 II=1,IWD
894
IF(KMAT(II).EQ.0) GO TO 30
895
NCPW=3*KMAT(II)
896
ICH=ICH-NCPW
897
IF(ICH.LE.0) LWD=LWD+1
898
IF(LWD.GT.KWD) GO TO 40
899
IF(ICH.LE.0) ICH=51-NCPW
900
IMAT(II)=LBYTX(ICH,NCPW,JMAT(LWD))
901
30 CONTINUE
902
903
904

```

```
IF(LWD.LT.KWD) GO TO 40          905
ICT1=0                           906
RETURN                           907
40  CONTINUE                      908
ICT2=ICT2+1                      909
IF(ICT2.LE.10) WRITE(6,2001) IWD,NWD,KWD,LWD 910
JCT2=ICT1-ICT2                  911
IF(JCT2.NE.KCT2) ICT2=0          912
KCT2=JCT2                        913
2001 FORMAT(5X,FPROBLEM TN DECODING AT*,5F5) 914
IWD=-1                           915
RETURNN                         916
END                             917
```

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```

PROGRAM S3BLAC(CFILE,DFILE,LFILE=0,YFILE=64,
+OUTPUT=64,TAPE1=CFILE,TAPE3=DFILE,TAPE2=LFILE,
+TAPER=YFILE,TAPE6=OUTPUT)
***** ****
C 1975 PROGRAM. E. HOLEMAN. LAST ALTERATION 2 SEP 77
C FROM S2BLAF 30 JUL 76.
*****
C PROGRAM TO ADD B AND L INFORMATION FOR DATA FILE FROM
C STOMA
*****
C 52000B TM STORAGE REQUIRED FOR LOADING.
*****
DIMENSION EL(21),SF(21),SL(21),IDAT(20,16),IDA(14),
+FHED(30),IHED(30),PT(10),IRT(10),LTM(8),JDA(68),
+ASPK(5),ATT(10,16),BATT(10,16),LABL(7),
+XM(3,3),YM(3,3),TATT(30,5),JATT(10,16)
EQUIVALENCE(FHED,IHED)
EQUivalence(IDA,JDA(55))
RD=57.2957795128
DR=1./RD
BDEL=11.2*DR
CDFL=COS(BDEL)
SDEL=SIN(BDEL)
PDFL=291.*DR
REWIND1
REWIND3
REWIND8
CALL DISCON(6)
IDTT=DATE(ADAT)
TG=SECOND(TT)
CALL COEG(1976.,EL,BF,SL)
CALL SLITE()
50 CONTINUE
ICT3=0
ICT4=0
T1=SECOND(TT)
READ(1) IWC,IGC,(FHED(I),I=1,IWC)
IF(FCF(1)) 110,60
60 CONTINUE
MNEMO=FHED(IWC)
FHED(IWC)=5_OFIL
ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6)
4001 FORMAT(R4,R5,2X,A10,1X,AB)
GMT1=FLOAT(IHED(19))/1000.
TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000.
GMTZ=GMT1-FLOAT(IHED(17))*TRAT
FHED(21)=97.54

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```

X1OTA=FHED(21)          61
WRITE(3) IWC,IGO,(FHED(I),I=1,IWC)      62
JD=IHED(26)             63
CALL TDAT3(LTM,TM,MON,FHED(27),JD,113)  64
10 CONTINUE               65
*****                   66
2 READ MASTER FRAME INPUT 67
*****                   68
READ(1) IWC,IGO,((TDAT(I,J),I=1,IWC),J=1,TGC) 69
IFOFF=EOF(1)            70
IF(IFOFF.NE.0) GO TO 100                  71
READ(1) IWCA,IGCA,((IATT(I,J),I=1,INCA),J=1,TGCA) 72
IF(IATT(IWCA,TGCA).NE.10HATT RECORD) GO TO 10      73
ICT3=ICT3+1                  74
*****                   75
3 JUPACK ATTITUDE MATRIX 76
*****                   77
IIA=10*IGO              78
CALL AUTO(IJA,TATT(2,1),LCD,KCD,JC)        79
NWC=(IIA-1)/3+1           80
CALL S2UP3(IATT(1,2),JATT,NWC)            81
ALT=TDA(1)                 82
XLT=FLOAT(IJA(2))/100.          83
XLG=FLOAT(IJA(3))/100.          84
THET=FLOAT(IJA(4))/100.          85
IF(XLT.GT.90.) XLT=XLT-360.      86
OMEG=FLOAT(IJA(5))/100.          87
XLTM=FLOAT(IJA(6))/100.          88
XLGM=FLOAT(IJA(7))/100.          89
IF(XLTM.GT.90.) XLTM=XLTM-360.      90
RKM=ALT+6371.2            91
RNMRKM=1.95325            92
CALL INVAP(XLT,XLG,ALT,.0001,B4,FL,BP,IT,BP) 93
CALL INTER(EL,SL,21,0,1,FL,SLX)          94
CALL INTEP(EL,RE,21,0,1,FL,REX)          95
HMN=(RA-REX)/SLX           96
IF(HMN.LE.0.) HMN=0.          97
IF(HMN.GT.ALT) HMN=ALT       98
IDA(8)=B4*10000.+.5         99
IF(FL.LT.0..OR.FL.GT.20.) FL=20.      100
IDA(9)=FL*1000.+.5          101
TDA(10)=HMN+.5             102
*****                   103
2 ADD GEOMETRY            104
*****                   105
DO 80 II=1,IGO             106
DO 80 JJ=1,10 .             107
ATT(IJ,IT)=FLOAT(JATT(JJ,IT))/100.        108
IF(ATT(IJ,II).GT.360.) ATT(IJ,IT)=ATT(IJ,IT)-360. 109
10 CONTINUE               110
IFG=0                      111

```

```

120 CONTINUE 112
SGAM=COS(XIOTA*DR)/COS(XLT*DR) 113
TGAM=ABS(SGAM) 114
IF(TGAM.LE.1.) GO TO 140 115
XLT=.99*XLT 116
IFGR=IFGB+1 117
IF(IFGB.LE.10) GO TO 120 118
WRITE(6,2006) ICR, XIOTA, XLT 119
2006 FORMAT(1X,*LAT PROBLEM AT*,I5,2F10.1) 120
GO TO 10 121
140 CONTINUE 122
GAM=ASIN(SGAM)*RD 123
IF(THET.GT.90..AND.THET.LT.270.) GAM=180.-GAM 124
DB=ATAN2(BP,BT)*RD 125
XIB=ASIN(BR/BA)*RD 126
PT(1)=-(90.+GAM+DB) 127
IRT(1)=3 128
RT(2)=90.+XIB 129
IRT(2)=1 130
CALL EULER(THA,PHA,YM,RT,IRT,2,0,THB,PHB,XM) 131
CALL EULER(90.,0.,XM,RT,IRT,0,1,ANGT,ANGP,YM) 132
IF(ANGT.LT.0.) ANGT=ANGT+360. 133
IF(ANGP.LT.0.) ANGP=ANGP+360. 134
IDA(11)=100.*ANGT+.5 135
IDA(12)=100.*ANGP+.5 136
TDA(13)=TDA(14)=0 137
DO 40 II=1,IGO 138
DO 40 JJ=1,5 139
JJ2=2*JJ 140
JJ1=JJ2-1 141
PHA=ATT(JJ1,II) 142
THA=90.+ATT(JJ2,II) 143
CALL EULER(THA,PHA,XM,RT,TRT,0,1,BATT(JJ1,II),BATT(JJ2,II),YM) 144
40 CONTINUE 145
DO 150 II=1,IGO 146
DO 150 JJ=1,10 147
IF(BATT(JJ,II).LT.0.) BATT(JJ,II)=BATT(JJ,II)+360. 148
JATT(JJ,II)=100.*BATT(JJ,II)+.5 149
150 CONTINUE 150
***** 151
9 PACK FOR OUTPUT 152
***** 153
CALL AUTCD(JDA,IATT(2,1),68,KCD,JCD) 154
IWCA=MAX0((IWCA-2),JCD)+2 155
IGCB=IGCA+1 156
CALL S2PK3(IATT(1,TGCB),JATT,IIA) 157
ICD=(IIA-1)/3+1 158
IF(ICD.LT.3) ICD=ICD+1 159
IWCP=MIND(ICD,3C) 160
IWCP=MAX0(I4CB,IWCA) 161
IGCB=(ICD-1)/30+IGCB 162

```

```

IF(MOD(IGC,1WCB).EQ.0) TGC=IGCB+1          163
IATT(IWCB,IGCB)=10H-MAG RECORD           164
TATT(IWCB,IGCA)=10H-TATT RECORD          165
IATT(IWCB,1)=10HHKP RECORD                166
*****  

C WRITE MASTER FRAME OUTPUT               167
*****  

      WRITE(3,TWC,IGC,((TDAT(I,J),I=1,IW)),J=1,IGC)    168
      WRITF(3,IWCB,IGCB,((TATT(I,J),I=1,TNCB)),J=1,IGCB) 169
      ICT4=ICT4+1                                170
      IF(MOD(ICT3,4).NE.1) GO TO 10              171
      HR=(GMTZ+FLOAT(IDAT(1,IGC))*TRAT)/3600.   172
      CALL TDATR(LTIM,TM,MON,HR,JD,01B)          173
      XLAM=0.                                     174
      IF(FL.GT.1.) XLAM=ACOS(SQRT(1./FL))FRD    175
      XLCT=HR+XLG*.066666667                     176
      IF(XLCT.GT.24.) XLCT=XLCT-24.               177
 2001 FORMAT(1I1,4X,*S3-P 64 SECOND LISTING FROM MAGNETIC* 178
      +* FILE PROGRAM,F/EY,*EPHEMERUS FOR *,F10.4,1X,A10,7X, 179
      +* COMPUTER RUN OF *,A10
      +/5X,FRT ASCENSION = *,F10.3,* INCLINATION = *,F10.3) 180
      IF(ICT3.EQ.1) WRITE(8,2001) HR,MON,ADAT,OMEG,XIOTA 181
      IF(ICT3.EQ.1) WRITE(8,2013) LABL            182
 2017 FORMAT(5X,*ORBIT T0 = *,3A10/T25,*GEOCENTRIC*, 183
      +T60,*GEO MAGNETIC*/10X,*TTME*,T20,*LT*,T30,*LONG*,T38, 184
      +*ALT*,T48,*THETA*,T59,*LATM*,T68,*LONM*,T78,*R(KM)*, 185
      +T91,*R*,T103,*LT*,T108,*HMIN*,T118,*_AMODA*,T129,*LTIME*) 186
      WRITE(8,2014) LTIM(3),LTIM(4),LTIM(5),XLG,ALT,THET, 187
      +XLTM,XLG1,RKM,RA,FL,HMN,XLAM,XLCT            188
 2014 FORMAT(7X,I2,2I3,F9.3,F10.3,F9.1,3F10.2,F10.1,F10.5, 189
      +F10.4,F10.1,2F10.3)                         190
      GO TO 10                                     191
 100  CONTINUE                                    192
      CALL CONNCF(6)                             193
      WRITF(8,2002) ICT3,ICT4                  194
      WRITE(6,2002) ICT3,ICT4                  195
 2002 FORMAT(1X,I5,* MASTER FRAMES READ FROM DFILE*/ 196
      +1X,IF,* MASTER FRAMES WRITTEN ON DFILE*) 197
      T2=SECOND(TT)-T1                          198
      WRITE(8,2003) T2                         199
      WRITE(6,2003) T2                         200
 2003 FORMAT(2X,*PROCESSING TIME FOR ORBIT IS*,F10.3) 201
      ENDFILE3                                  202
      CALL DISCON(6)                           203
      GO TO 50                                  204
 110  CONTINUE                                    205
      CALL CONNCF(6)                           206
      T2=SECOND(TT)-T0                          207
      WRITF(8,2005) T2                         208
      WRITF(6,2005) T2                         209
 2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S3BLA IS*,F10.3) 210
                                              211
                                              212
                                              213

```

PROGRAM S3RLAC

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CALL DISCON(6)
END

214
215

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```

PROGRAM S3SACD(DFILE,EFILE,YFILE,ZFILE,OUTPUT=64,
+TAPE1=DFFILE, TAPE2=ZFILE,TAPE3=YFILE,
+TAPE4=ZFILE,TAPE5=OUTPUT)
***** ****
C 1976 PROGRAM. E. HOLEMAN. LAST ALTERATION 9 SEP 77
C FROM S2SABI 22 DEC 77.
*****
C PRELIMINARY SORT OF DATA BY "L" AND HMIN.
C SEPARATION ONLY. NO SORTING
C 12 LINE PAD LISTING OF P-ALPHA INSTRUMENT ONLY...
C NUMBER SPECTRUM ONLY. NO FLUXES CALCULATED.
C ****
C IGT3 COUNTS RECORDS READ.
C ****
C 56000B TM STORAGE REOUTPED FOR LOADING.
C ****
C ALTERATION HISTORY.
C 24 AUG 77. CHANGED HMIN CALCULATION FOR HMIN >1000. KM.
C ****
C ****
C DIMENSION IDAT(20,16),JDA(68),ERG(33),FERG(33),BORL(28),
+FHED(30),IHED(30),LTIM(8),JDAT(12,4),IDUT(14,13),XPA(13),
+KDAT(4,8),BTATT(10,16),IDA(14),JATT(10,17),KDA(15),
+IPAD1(12,12,2),IPAD2(8,12,4),TATT(3),5,BORH(17),
+TMAT(13,12,2),JMAT(8,12),KMAT(300),LABEL(3),ICAL(4)
EQUIVALENCE(FHED,IHED)
EQUIVALENCE(IDA,JDA(55))
COMMON /TOGEGG/ OMEGA,THETA,RIOTA,RNM,XLT,XLG,ALT,XLTM,XLGM
DATA IPAD1,IPAD2,EDUT /8540/
DATA ERG /116.,100.,60.,58.,50.,29.,25.,15.5,15.,14.3,
+13.,9.14,8.52,8.,6.69,6.41,6.1,6.02,6.51,5.5,5.31,
+2.927,2.69,2.038,2.01,1.445,.948,6.58,4.03,3.64,
+1.56,1.35,1.24/
DATA BORL /1.,1.14,1.15,1.16,1.17,1.18,1.19,1.2,1.3,1.4,
+1.5,1.6,1.7,1.8,1.9,2.,2.2,2.4,2.6,2.8,3.,3.5,4.,
+5.,6.,8.,10.,25./
DATA BORH /0.,100.,200.,300.,400.,500.,600.,700.,800.,900.,
+1000.,1500.,2000.,3000.,4000.,6000.,10000./
FLUX(IFLX)=FLDAT(IFLX.AND.MSKB)/FLDIT SHIFT(IFLX,-45))
MASK1=SHIFT(19,+5)
MASK3=7777777777777777
MASK2=777773
SNB=1.
SLF=1.
KWDME=-993
REWIND1

```

```

REWIND2          51
REWIND8          52
REWIND9          53
TO=SECOND(TTT)  54
WRITE(8,2004)    55
2004 FORMAT(1I1,4X,*PROCESSING BEGUN IN S3SACD*) 56
FC  CONTINUE     57
IFGC=-1         58
IDTM=0          59
ICT1=0          60
ICT3=0          61
ICT4=0          62
T1=SECOND(TTT)  63
READ(1) JWC,JGC,(FHED(I),I=1,JWC) 64
IF(EOF(1)) 110,60 65
50  CONTINUE     66
MNFMO=FHED(JWC) 67
FHED(JWC)=5LEFILE 68
RIOTA=FHED(21) 69
ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6) 70
4001 FORMAT(R4,R5,2X,A10,1X,A8) 71
THTL=0.          72
ALTL=0.          73
HMNL=0.          74
FLL=0.          75
BEL=0.          76
DTHT=.047       77
DAL T=0.         78
DHMN=0.          79
DFL=0.          80
DBE=0.          81
WRITE(2) JWC,JGC,(FHED(I),I=1,JWC) 82
GMT1=FLOAT(IHED(18))/1000. 83
TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000. 84
GMTZ=GMT1-FLOAT(IHED(17))*TRAT 85
CALL TDAT3(-TIM,TMA,MON,FHED(27),THE7(26),11B) 86
WRITE(6,2004) 87
WRITE(9,2011) 88
2010 FORMAT(1I1) 89
WRITE(6,2003) FHED(27),MON,LABL 90
WRITE(8,2003) FHED(27),MON,LABL 91
WRITE(9,2003) FHED(27),MON,LABL 92
2008 FORMAT(5X,*ORBIT ID*,F8.2,A10,2X,3A10) 93
IFLL=-999        94
IBEL=-999        95
IHML=-999        96
10  CONTINUE     97
*****          98
3  READ MASTER FRAME INPUT 99
*****          100
READ(1) IWC,IGC,((TDAT(I,J),I=1,IWC),J=1,IGC) 101
111

```

```

IEOF=EOF(1)                                112
IF(IEOF.NE.0) GO TO 20                      113
PFA0(1) IWC1,IGCA,((IATT(I,J),I=1,I+CA),J=1,TGCA) 114
IF(IATT(IWC1,TGCA).NE.10HMAG RECORD) GO TO 10 115
*****                                         116
C JNPACK HOUSEKEEPING                      117
*****                                         118
IIA=10*IGC                                  119
IIB=(IIA-1)/3+1                            120
CALL AUTDC(JDA,IATT(2,1),KCD,JCD,IC)        121
ICT3=ICT3+1                                 122
HR=(GMTZ+FLOAT(IATT(1,1))*TRAT)/360.       123
CALL TDAT3(LTIM,TMA,MON,HR,JD,01B)          124
ALT=IDA(1)                                 125
FL=FLOAT(IDA(3))/1000.                     126
BE=FLOAT(IDA(8))/10000.                    127
HMN=IDA(10)                               128
RKM=ALT+6371.2                            129
RNM=RKM/1.85325                           130
OMEGA=FLOAT(IDA(5))/100.                   131
THETA=FLOAT(IDA(4))/100.                   132
IF(ICK3.NE.1) GO TO 250                   133
THTL=THETA                                134
ALTL=ALT                                 135
HMNL=HMN                                136
TMAL=TMA                                137
FLL=FL                                 138
BEL=BE                                 139
DTHTL=.015                                140
DALT_=0.                                141
DHMNL=0.                                142
DFLL=0.                                143
DBEL=0.                                144
250 CONTINUE                             145
*****                                         146
C SET TIME AND DELTA'S LOGIC             147
*****                                         148
JNOW=(IATT(1,1).AND.MASK8)/16            149
INOW=JNOW-IHED(29)                         150
IGAP=INOW-ILAS                            151
ILAS=INOW                                152
XGAP=IGAP                                153
IF(XGAP_.LT._1.) XGAP=1.                  154
DTHT=(THETA-THTL)/XGAP                  155
DALT=(ALT-ALTL)/XGAP                     156
DHMN=(HMN-HMNL)/XGAP                    157
DFL=(FL-FLL)/XGAP                        158
DBE=(BE-BEL)/XGAP                        159
IF(DTHT.GT..08.DR.DTHT.LT..15) DTHT=DTHTL 160
IF(ABS(DFL).GT..025) DFL=DFLL           161
IF(ABS(DBE).GT..025) DBE=DBEL           162

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IF(ABS(DALT1).GT.2.5) DALT=DALT1          163
IF(ABS(DHMN).GT.2.5) DHMN=DHMNL         164
DTHT_=DTHT                                165
DFLL=DFL                                    166
DBEL=DEB                                    167
DALTL=DAL_T                                 168
DHMNL=DHMN                                  169
THTL=THETA                                 170
ALT=ALT                                     171
HMNL=HMN                                    172
FLL=FL                                     173
BEL=RE                                     174
TMAL=TMA                                   175
IGCB=3                                     176
IF(IGCA.EQ.5) IGCB=4                      177
CALL S2UP3(IATT(1,IGCB),JATT,IIB)        178
DO 260 II=1,IGC                            179
DO 260 JJ=1,10                            180
BATT(JJ,II)=FLOAT(JATT(JJ,II))/100.       181
260 CONTINUE                                182
***                                           183
C BEGIN ONE SECOND PROCESSING LOOP.        184
***                                           185
      II1=1                                 186
  90  CONTINUE                                187
  DO 70 II=II1,IGC                          188
    DTM=(IDAT(1,II).AND.MASKR)/16-JNOW     189
    IF(DTM.GT.15.) DTM=15.                   190
    IF(DTM.LT.0.) DTM=1.                     191
    THETA=THTL+DTHT*DTM                    192
    ALT=ALTL+DAL_T*DTM                     193
    HMN=HMNL+DHMN*DTM                     194
    FL=FLL+DFL*DTM                        195
    BE=BEL+DEB*DTM                        196
    TMA=TMAL+DTM                         197
    RKM=ALT+6371.2                        198
    RNK=RKM/1.85325                      199
    CALL GEOGA(TMA)                      200
    IF(XLT.M.GT.180.) XLT=XLT-360.        201
    IF(XLT.GT.180.) XLT=XLT-360.        202
    TMA=TMA+1.                           203
    HPA=(GMTZ+FLOAT(IDAT(1,II))*TRAT)/3500. 204
    IF(XLG.LT.0.) XLG=XLG+360.           205
    XLCT=HRA+XLG*.066656667              206
    DO 140 JJ=1,27                         207
    IFLC=JJ                                208
    IF(BORL(JJ).LT.FL.AND.FL.LE.BORL(JJ+1)) GO TO 160 209
  140 CONTINUE                                210
  150 CONTINUE                                211
  DO 370 JJ=1,10                            212
  IHMC=JJ                                  213

```

```

      IF(BORH(JJ).LE.HMN.AND.HMN.LE.BORH(JJ+1)) GO TO 38]    214
370  CONTINUE                                         215
*****  

C USE ALTERNATE HMAIN PROCEDURE.                         216
*****  

HMN=ALT                                              217
IHMC=16                                              218
IF(HMN.LE.5000.) CALL HMALT(BE,FL,HMN,IHMC)          219
IF(HMN.GT.ALT) HMN=ALT                            220
780  CONTINUE                                         221
IF(HMN.GT.ALT) HMN=ALT                            222
IF(TABS(IHMC-IHML).GT.3.AND.ICT4.NE.0) GO TO 70    223
IF((TFLC.NE.TFLL.OR.IHMC.NE.IHML).AND.IDTM.GT.4) GO TO 20  224
D10C1PRINT 3004,II,TFLC,IHMC,THETA,ALT,FL,HMN        225
3004  FORMAT(1X,I5,2I3,5F12.5)
KDA(1)=KDA(1)+IFIX(100.*XLT)
KDA(2)=KDA(2)+IFIX(100.*XLG)
KDA(3)=KDA(3)+IFIX(100.*THETA)
KDA(4)=KDA(4)+IFIX(100.*OMEGA)
KDA(5)=KDA(5)+IFIX(100.*XLT4)
KDA(7)=KDA(7)+IDIA(7)
KDA(8)=KDA(8)+IDA(1)
KDA(9)=KDA(9)+IFTX(1000.*FL)
KDA(10)=KDA(10)+IFTX(HMN)
KDA(13)=KDA(13)+IFTX(100.*X_GM)
KDA(14)=KDA(14)+IFTX(100.*X_CT)
KDA(15)=KDA(15)+1
DO 330 JJ=11,12
KDA(JJ)=KDA(JJ)+IDIA(JJ)
730  CONTINUE                                         226
ALT2=ALT                                         227
XLT2=XLT4                                         228
XLG2=XLG4                                         229
TOTM=IDT1+1                                       230
ICT1=ICT1+1                                       231
CALL AUTDC(JDAT,TDAT(3,II),<CD,JCD,EDC)           232
CALL S2PAL(IDAT(2,II),KDAT,-CHN)                  233
*****  

C ADD DATA TO PITCH ANGLE DISTRIBUTION             234
*****  

IFGA=SHIFT(IDAT(1,TT),-45)                           235
ICAL(1)=ICAL(2)=ICAL(3)=ICAL(4)=0                 236
IF(IFGA.GT.78) ICAL(1)=1                           237
IF((IFGA.AND.78).GT.3) ICAL(2)=1                 238
IF((IFGA.AND.38).GT.1) ICAL(3)=1                 239
IF((IFGA.AND.18).GT.1) ICAL(4)=1                 240
DO 240 KK=1,4                                     241
IF(ICAL(KK).EQ.1) GO TO 240                      242
IF(JDAT(1,KK).GE.4ASKC) GO TO 240                243
KK2=2*KK                                         244

```

```

KK1=KK2-1                                265
IPA=ABS(BATT(KK1,TT))/15.+1.              266
IF(IPA.GT.12) IPA=12                      267
IF(IPA.LT.1) IPA=1                        268
KK3=(KK-1)/2+1                           269
DO 150 JJ=1,12                            270
150  IPAD1(JJ,IPA,KK3)=IPAD1(JJ,IPA,KK3)+JDAT(JJ,KK)+MASKA 271
CONTINUE                                     272
240  CONTINUE                                     273
IPA=ABS(BATT(9,TT))/15.+1.                274
IF(IPA.GT.12) IPA=12                      275
IF(IPA.LT.1) IPA=1                        276
DO 230 JJ=1,3                            277
230  IPAD2(LCHN,IPA,JJ)=IPAD2(LCHN,IPA,JJ)+KDAT(JJ,LCHN)+MASKA 278
CONTINUE                                     279
20  CONTINUE                                     280
GO TO 10                                     281
20  CONTINUE                                     282
TI1=II                                      283
IF(IFGC_.LT.0) GO TO 30                  284
IF(IFOF.NE.0.AND.IITM.LE.2) GO TO 100    285
IF(IITM.LE.2) GO TO 30                  286
310C:1 PRINT 3004,ICT3,IFLC,IHMC,DHT,DALT,FL,DMHN 287
ICT4=ICT4+1                                  288
*****
3 PRINT OUT 64 SECOND PITCH ANGLE DISTRIBUTIONS AND ZERO SUMS. 289
*****
SNB=KDA(15)
IF(SNB.LT.1.) SNB=1.
DO 340 IE=1,14
KDA(IE)=FLOAT(KDA(IE))/SNB+.5
340  CONTINUE
IF(KDA(14).GT.2400) KDA(14)=KDA(14)-2400
ALTA=KDA(1)
XLTA=FLOAT(KDA(2))/100.
XLGA=FLOAT(KDA(3))/100.
XLTMA=FLOAT(KDA(6))/100.
XLGMA=FLOAT(KDA(13))/100.
RAA=FLOAT(KDA(8))/10000.
FLA=FLOAT(KDA(9))/1000.
HMNA=KDA(10)
PRINT 3004,ICT3,IFLC,IHMC,RAA,ALTA,F_LA,HMNA
WRITE(9,2006) XLTMA,XLGMA,ALTA,INTM,RAA,FLA,HMNA
200F FORMAT(/10X,*MLAT =*,F8.2,* MLONG =*,F8.2,* ALT =*,  

+F8.1,* DT = *,T4/10X,*BAV =*,F8.3,* LAV =*,  

+F8.2,* MAV =*,F8.1)
WRITE(9,2001)
2001 FORMAT(/3X,FP-ANG PA1 N1 PA2 N2 PA3 N3 PA4 *  

+*N4 PA5 N5 PA6 N6 PA7 N7 PA8 N8*)
*****
3 SET UP LEPS PITCH ANGLE MATRIX

```

```

*****  

    DO 130 KK=1,2          316  

    DO 170 IT=1,12          317  

    XPA(IT)=FLDAT(15*(IT-1))+7.5 318  

    IMAT(I3,IT,KK)=SHIFT(IPAD1(I,IT,KK),-45) 319  

    DO 150 JJ=1,12          320  

    IMAT(JJ,IT,KK)=IPAD1(JJ,IT,KK).AND.MASKB 321  

180  CONTINUE              322  

200  FORMAT(2X,F6.1,I4,T7,3I6,8T7) 323  

201  FORMAT(2X,F6.1,I4,F9.1,3F8.1,8F9.1) 324  

170  CONTINUE              325  

130  CONTINUE              326  

*****  

3  SET UP P-ALPHA COINC MODE AND FRONT DET PA MATRICES 327  

*****  

    DO 130 IT=1,12          328  

    DO 200 JJ=1,8          329  

    IPAD2(JJ,IT,4)=SHIFT(IPAD2(JJ,IT,1),-45) 330  

    IPAD2(JJ,IT,1)=IPAD2(JJ,IT,1).AND.MASKP 331  

    IF(JJ.GT.5) GO TO 200 332  

    IJ=2*JJ-1              333  

    ICUT(IJ,IT)=IPAD2(JJ,IT,1) 334  

    IF(IT.EQ.1) IOUT(IJ,13)=0 335  

    IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,IT) 336  

200  CONTINUE              337  

2001 FORMAT(1X,5I12)        338  

2011 FORMAT(2X,F6.1,2(,2T7,2T8,2T5,I7,10*)) 339  

190  CONTINUE              340  

    IOUT(11,13)=0          341  

    DO 320 IT=1,12          342  

    DO 350 JJ=1,8          343  

    IPAD2(JJ,IT,2)=IPAD2(JJ,IT,2).AND.MASKP 344  

150  CONTINUE              345  

    ICUT(11,IT)=IPAD2(-,IT,2) 346  

    IOUT(11,13)=IOUT(11,13)+ICUT(11,IT) 347  

320  CONTINUE              348  

*****  

3  SET UP BACK DET AND NO OF OBS MATRICES 349  

*****  

    IOUT(13,13)=0          350  

    DO 210 IT=1,12          351  

    DO 220 JJ=1,8          352  

    IPAD2(JJ,IT,3)=IPAD2(JJ,IT,3).AND.MASKP 353  

220  CONTINUE              354  

    ICUT(13,IT)=IPAD2(-,IT,3) 355  

    IOUT(13,13)=IOUT(13,13)+IOUT(13,IT) 356  

210  CONTINUE              357  

    DO 310 IT=1,12          358  

    DO 360 JJ=1,5          359  

    IJ=2*JJ                360  

    IOUT(IJ,IT)=IPAD2(JJ,IT,4) 361  


```

```

        IF(IJ.EQ.1) IOUT(IJ,13)=0          367
        IOUT(IJ,13)=IOUT(IJ,13)+IOUT(IJ,II) 368
360  CONTINUE                         369
        IOUT(12,13)=0                      370
        IOUT(14,13)=0                      371
        IOUT(12,II)=IPAD2(5,II,4)          372
        IOUT(14,II)=IPAD2(6,II,4)          373
        IOUT(12,13)=IOUT(12,13)+IOUT(12,II) 374
        IOUT(14,13)=IOUT(14,13)+IOUT(14,II) 375
310  CONTINUE                         376
        CALL PAGE3(KMAT,KDA,IMAT,IPAD2,KWDD) 377
        KWDM=MAX0(KWDM,KWDD)              378
        WPITE(2) KWDD,1,(KMAT(I),I=1,KWDD) 379
        XPA(13)=30.                        380
        DO 80 II=1,13                     381
        ISL=0                             382
        DO 120 JJ=1,14                     383
        ISL=ISL+IOUT(JJ,II)               384
120  CONTINUE                         385
        IF(ISL.GT.0) WRITE(9,2007) XPA(II),(TOIT(I,II),I=1,14) 386
*0  CONTINUE                         387
        WRITE(8,2012) FLA,HMNA,INTM,(IOUT(I,13),I=1,14)      388
2012 FORMAT((1X,F7.3,F7.1,I5,7(T5,I3)))             389
2007 FORMAT((1X,F6.1,7(I6,I3)))                  390
        IF(IEOF.NE.0) GO TO 100           391
*4*****
3  ZERO CONSTANTS FOR NEXT LAT, LONG BOX
*4*****
        INTM=0                           392
30  CONTINUE                         393
        DO 40 II=1,12                     394
        KDA(II)=0                         395
        DO 41 JJ=1,12                     396
        IPAD1(JJ,II,1)=0                 397
        IPAD1(JJ,II,2)=0                 398
        IF(JJ.GT.8) GO TO 40             399
        IPAD2(JJ,II,1)=0                 400
        IPAD2(JJ,II,2)=0                 401
        IPAD2(JJ,II,3)=0                 402
        IPAD2(JJ,II,4)=0                 403
40  CONTINUE                         404
        IFGC=0                           405
        KDA(13)=0                         406
        KDA(14)=0                         407
        KDA(15)=0                         408
        IF(XLT.GT.30.) XLT=XLT-360.     409
        XLT1=XLT4                         410
        XLG1=XLG4                         411
        ALT1=ALT                          412
        IFL1=IFLC                         413
        IHML=IHMC                         414
                                         415
                                         416
                                         417

```

GO TO 90	418
100 CONTINUE	419
WRITE(8,2002) IGT3,IGT4,KWDW	420
2002 FORMAT(1X,I5,* RECORDS READ FROM DFILE*/	421
+1X,I5,* RECORDS WRITTEN ON FFILE*/	422
+* MAXIMUM OUTPUT RECORD SIZE WAS*,I5)	423
T2=SECOND(TTT)-T1	424
WRITE(8,2003) T2	425
2003 FORMAT(2X,*PROCESSING TIME FOR ORBTE TS*,F10.3)	426
ENDFILE2	427
GO TO 50	428
110 CONTINUE	429
T2=SECOND(TTT)-T0	430
WRITE(8,2005) T2	431
2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S3SAC TS*,F10.3)	432
END	433

```

SUBROUTINE HMALT(BE,FL,HMN,IHMC) 434
DIMENSION BORH(6),CA(6,2),CB(6,2),BORB(6) 435
DATA BOR1 /1000.,1500.,2000.,3000.,4000.,6000./ 436
DATA CA /.13935,.17938,.15613,.12291,.10298,.06976, 437
+.16321,.13106,.095352,.06811,.05911+,.134698/ 438
DATA CB /.1+,.115,.095,.062,.04,.017, 439
+.1557,.1451,.1294,.095,.0664,.0381/ 440
JJ=1 441
IF(FL.GT.4.) JJ=2 442
XL=ALOG10(F_) 443
DO 10 II=1,5 444
BORB(II)=CB(IT,JJ)+CA(II,JJ)*XL 445
CONTINUE 446
DO 20 IT=1,5 447
KK=IT 448
IF(BORB(IT).GT.BE.AND.BE.GE.BORB(IT+1)) GO TO 30 449
PC CONTINUE 450
HMN=. 451
IHMC=1 452
RETURN 453
70 CONTINUE 454
IHMC=10+KK 455
HMN=(BE-BORB(KK))/(BORB(KK+1)-BORB(KK))*((BORH(KK+1)
+-BORH(KK))+BORH(KK)) 456
RETURN 457
END 458
459

```

APPENDIX - 9 - 135

```

PROGRAM S3S40F(ETIME,FFILE,YFILE=64,TTITLE,OUTPUT=64,
+TAPE4,TAPE2=ETIME,TAPE8=YFILE,TAPE1=ETIME,
+TAPE3=ZFILE,TAPE6=OUTPUT)
*** **** * **** * **** * **** * **** * **** * **** * **** * **** * **** *
C 1977 PROGRAM. E. HOLEMAN. LAST ALTERATION 15 NOV 77
C FROM S2SBAD 18 JAN 77.
C *****
C *****
C PRELIMINARY SORT OF DATA BY L AND HMEV.
C 12 LINE PAD LISTING FOR P-ALPHA ONLY. NUMBER DISTRIBUTIONS.
C *****
C *****
C IGT1 COUNTS TOTAL NUMBER OF DATA RECORDS READ.
C IGT2 COUNTS NUMBER OF OUTPUT DATA RECORDS
C IGT4 COUNTS NUMBER OF DATA READ FOR ORBIT IFIL.
C *****
C *****
C ALTERATION SUMMARY
C 18 NOV 77 ADDED S3-2 COMPATIBILITY.
C *****
C *****
C 560008 7M STORAGE REQUIRED FOR LOADING.
C *****
C *****
C DIMENSION
+FHED(30),THED(30),LTIM(8),TOUT(14,13),YPA(13),B0RL(25),B0RH(17),
+IDA(15),INDX(434),JNDX(433),JMAT(384),
+IP01(13,12,2),IP02(8,12,4),IMAT(384),
+KMAT(384),LBL(3),
+JDA(15),JP01(13,12,2),JP02(8,12,4)
EQUIVALENCE(FHED,THED)
COMMON JNDX
DATA IP01,IP02,IDL /878*0/
DATA JDA,JP01,JP02 /711*0/
DATA IMAT,JMAT /759*0/
DATA B0RL /1.,1.14,1.15,1.15,1.17,1.18,1.19,1.2,1.3,1.4,
+1.5,1.6,1.7,1.8,1.9,2.,2.2,2.4,2.6,2.8,3.,3.5,4.,
+5.,6.,8.,10.,25./
DATA B0RH /0.,100.,200.,300.,400.,500.,600.,700.,800.,
+900.,1000.,1500.,2000.,3000.,4000.,5000.,10000./
00 330 II=1,433
JNDX(II)=0
*30 CONTINUE
KNDX=384
IFGA=0
IFGR=0
IFIL=0
SNB=0.
SLF=0.
KWDN=250

```

```

REWIND1          61
REWIND2          62
REWIND3          63
REWIND9          64
TCT1=0          65
TCT2=0          66
CALL OPENMS(4,INDX,434,0) 67
ITL=433          68
T0=SECOND(TTT) 69
WRITE(8,2004)    70
3 1011 WRITE(6,2011) 71
2004 FORMAT(1I1,4X,*PROCESSING BEGUN IN S3SADE*) 72
JEOF=0          73
FC  CONTINUE      74
JEOF=JEOF+1    75
IF(JEOF.GE.+) GO TO 160 76
IFGC=-1          77
IDLT=0          78
ICT3=0          79
ICT4=0          80
T1=SECOND(TTT) 81
READ(2) INC,IGC,(FHED(I),I=1,IWC) 82
IF(EOF(2)) 50,60 83
FC  CONTINUE      84
JEOF=0          85
IFIL=IFIL+1    86
MNEMO=FHED(1WC) 87
FHED(IWC)=5_ FILE 88
IF(IFIL.EQ.1) WRITE(1) IWC,IGC,(FHED(I),I=1,IWC) 89
RIOTR=FHED(21) 90
ENCODE(30,4001,LABL) (IHED(I),I=1,3),IHED(6) 91
4001 FORMAT(R4,R5,2X,A10,1X,AB) 92
TSAT=3          93
IF((IHED(1).AND.77777777).EQ.4953-2) TSAT=2 94
THTL=0.          95
ALTL=0.          96
DTHT=.047       97
GMT1=FLOAT(IHED(18))/1000. 98
TRAT=FLOAT(IHED(19))/FLOAT(IHED(20))/1000. 99
GMT2=GMT1-FLOAT(IHED(17))*TPAT 100
CALL TDAT3(LTIM,TM1,MON,FHED(27),IHED(26),11B) 101
3 1011 WPTTF(6,2003) FHED(27),MON,LABL 102
WRITE(8,2003) FHED(27),MON,LABL 103
2011 FORMAT(1H1) 104
WRITE(8,2003) FHED(27),MON,LABL 105
2003 FORMAT(5X,*ORBIT T*,F8.2,A10,2X,3A10) 106
10  CONTINUE      107
20  CONTINUE      108
IF(IFGA.NE.0) PRINT 3001,IFGA,IWC,THM,IEL,ITN,ILAT,ILON,NUM3
IFGA=0          109
*****          110
*****          111

```

```

C READ EFILE RECORD AND ADD DATA TO RANDOM FILE          112
C*****          113
      READ(2) IWC,IGO,(KMAT(I),I=1,TWC)          114
      IEOF=EOF(?)          115
      IF(IEOF.NE.0) GO TO 100          116
      ICT4=ICT4+1          117
      ICT1=ICT1+1          118
      IF(ISAT.EQ.2) CALL UNPEF(KMAT,IDA,IP01,IP02,TWC)          119
      IF(ISAT.EQ.3) CALL UNPE3(KMAT,IDA,IP01,IP02,TWC)          120
      IF(IWC.LE.0) IFGA=1          121
      IF(IWC.LE.0) GO TO 90          122
    *001 FORMAT(1X,12I5)          123
C*****          124
C DETERMINE L AND HMIN INDICES.          125
C*****          126
      HMN=IDA(10)          127
      FL=FLOAT(IDA(9))/1000.          128
      ILAT=IDA(6)+9000          129
      IF(ILAT.GT.18000) TLAT=ILAT-36000          130
      ILAT=(ILAT-1)/500+1          131
      ILON=(IDA(13)-1)/500+1          132
      IALT=(IDA(1)-1)/100-3          133
      DO 30 II=1,27          134
      IEL=II          135
      IF(BORL(II).LT.FL.AND.FL.LT.BORL(II+1)) GO TO 40          136
30  CONTINUE          137
40  CONTINUE          138
      DO 130 IT=1,16          139
      IHM=II          140
      IF(BORH(IT).LE.HMN.AND.HMN.LE.BORH(IT+1)) GO TO 25          141
130  CONTINUE          142
      IHM=17          143
250  CONTINUE          144
      IHM=17-IHM          145
      IIN=IEL-1*16+IHM          146
C510E1PRINT 3001,ILAT,IALT,ILON,IIN,IEL,IHM,FL          147
      IF(IHM.GT.16) IFGA=2          148
      IF(IEL.GT.27) IFGA=3          149
      IF(IIN.GT.432) IFGA=4          150
      IF(ILAT.GT.36.OR.ILON.GT.72) IFGA=5          151
      IF(ILAT.LE.0.OR.ILON.LE.0) IFGA=6          152
      IF(IEL.LE.0.OR.IHM.LE.0) IFGA=7          153
      IF(IFGA.NE.0) GO TO 90          154
      IF(IIN.EQ.IIL) GO TO 140          155
      CALL WRITMS(4,IMAT,JNDX(IIL),IIL,-1)          156
      IRO=IIN          157
      IF(JNDX(IIN).EQ.0) IRO=433          158
      CALL READMS(4,IMAT,JNDX(IRO),IRO)          159
      IIL=IIN          160
      CONTINUE          161
      IF(JNDX(IIL).GE.1) GO TO 210          162

```

```

230 CONTINUE 163
  DO 150 IT=1,IWC 164
***** 165
C NEW DATA FOR THESE COORDS. 166
***** 167
      IMAT(II)=KMAT(IT) 168
150 CONTINUE 169
      KNDX=192 170
      IF(IWC.GT.192) KNDX=384 171
      JNDX(IIL)=KNDX 172
      GO TO 90 173
910 CONTINUE 174
***** 175
C ADD NEW DATA TO OLD 176
***** 177
      JWC=-1 178
      IF(ISAT.EQ.2) CALL UNPEF(IMAT,JDA,IPO1,IPD2,JWC) 179
      IF(ISAT.EQ.3) CALL UNPE3(IMAT,JDA,IPO1,IPD2,JWC) 180
      IF(JWC.LF.0) GO TO 230 181
      NUM1=JDA(15) 182
      NUM2=JDA(15) 183
      NUM3=NUM1+NUM2 184
      C10C1 PRINT 3001,ITIN,NUM1,NUM2,NUM3 185
      IF(N1M3.LE.0) IFGA=8 186
      IF(IFGA.NE.0) GO TO 90 187
      DO 21 II=1,12 188
      DO 20 JJ=1,13 189
      IPO1(JJ,II,1)=IPO1(JJ,IT,1)+IPD1(JJ,II,1) 190
      IPO1(JJ,II,2)=IPO1(JJ,IT,2)+IPD1(JJ,II,2) 191
      IF(JJ.GT.4) GO TO 20 192
      DO 71 KK=1,+ 193
      IPO2(JJ,II,KK)=IPO2(JJ,II,KK)+IPD2(JJ,II,KK) 194
70  CONTINUE 195
70  CONTINUE 196
      IF(IDA(2).GT.9000) IDA(2)=IDA(2)-36000 197
      IF(IDA(6).GT.9000) IDA(6)=IDA(6)-36000 198
      IF(JDA(2).GT.9000) JDA(2)=JDA(2)-36000 199
      IF(JDA(6).GT.9000) JDA(6)=JDA(6)-36000 200
      DO 220 II=1,14 201
      IDA(TI)=(IDA(TI)*N1M1+JDA(TI)*NUM2)/NUM3 202
220 CONTINUE 203
      IF(IDA(2).LT.0) IDA(2)=IDA(2)+36000 204
      IF(IDA(6).LT.0) IDA(6)=IDA(6)+36000 205
      IDA(15)=NUM3 206
      IWC=0 207
      IF(ISAT.EQ.2) CALL PACEF(IMAT,IDA,IPO1,IPD2,IWC) 208
      IF(ISAT.EQ.3) CALL PACE3(IMAT,IDA,IPO1,IPD2,IWC) 209
      IF(IAC.GT.KNDM) WRITE(6,3001) 1860,TAC 210
      KNDX=192 211
      IF(IWC.GT.192) KNDX=384 212
      JNDX(IIL)=KNDX 213

```

```

      GO TO 90          214
160  CONTINUE          215
      WRITE(6,3002)          216
3002 FORMAT(1X,*INPUT COMPLETE*)
C*****
3  INPUT COMPLETE. BEGIN OUTPUT.          217
C*****
      CALL WRITMS(4,IMAT,JNDX(IIL),IIL,-1)          218
      IFGP=0          219
      DO 170 IIT=1,432          220
      IF(MDO(IIT,16).EQ.1) IFGP=1          221
      IF(JNDX(IIT).LT.1) GO TO 170          222
      IF(IFGP.EQ.1) WRITE(9,2010)          223
      IFGP=0          224
      CALL READMS(4,IMAT,JNDX(III),III)          225
      JWD=-2          226
      IF(ISAT.EQ.2) CALL UNPEF(IMAT,IDA,IP01,IP02,JWD)          227
      IF(ISAT.EQ.3) CALL UNPE3(IMAT,IDA,IP01,IP02,JWD)          228
      IF(JWD.LE.0) GO TO 170          229
      WRITE(1) JWD,1,(IMAT(I),I=1,JWD)          230
      ICT2=ICT2+1          231
      ALTA=IDA(1)          232
      XLT4=FLOAT(IDA(2))/100.          233
      IF(XLT4.GT.30.) XLT4=XLT4-360.          234
      XLGA=FLOAT(IDA(3))/100.          235
      XLTM=FLOAT(IDA(5))/100.          236
      IF(XLTM.GT.30.) XLTM=XLTM-360.          237
      XLGM=FLOAT(IDA(13))/100.          238
      BAA=FLOAT(IDA(8))/10000.          239
      FLA=FLOAT(IDA(9))/1000.          240
      HMNA=IDA(10)          241
      IDLT=IDA(15)          242
      WRITE(9,2006) XLT4,XLGM,ALTA,IDL,811,FLA,HMNA          243
2006 FORMAT(//10X,*MLAT =*,F8.2,* MLONG =*,F8.2,* ALT =*,          244
      +F8.1,* TIME INTERVAL IS *,I4/10X,*31V =*,F8.3,* _AV =*,          245
      +F8.2,* TMAV =*,F3.1)
      WRITE(9,2001)
2001 FORMAT(/3X,F8-ANG PA1 N1 PA2 N2 PA3 N3 PA4 *
      +N4 PA5 N5 PA6 N6 PA7 N7 PA8 N8*1          246
C*****
3  SET UP P-ALPHA COINC MODE AND FRONT DET PR MATRICES          247
C*****
      DO 240 IT=1,13          248
      DO 240 JJ=1,14          249
      IOUT(JJ,IT)=0          250
240  CONTINUE          251
      XPA(13)=0.          252
      DO 190 IT=1,12          253
      XPA(IT)=FLOAT(15*(IT-1)+7.5          254
      DO 200 JJ=1,5          255
      JJ1=2*JJ-1          256

```

```

JJ2=JJ1+1          265
IOUT(JJ1,IT)=IPD2(JJ,IT,1) 266
IOUT(JJ2,IT)=IPD2(JJ,IT,4) 267
IF(IT.EQ.1) IOUT(JJ1,13)=IOJT(JJ2,13)=0 268
IOUT(JJ1,13)=IOJT(JJ1,13)+IOUT(JJ1,IT) 269
IOUT(JJ2,13)=IOJT(JJ2,13)+IOUT(JJ2,IT) 270
100 CONTINUE      271
IOUT(11,II)=IPD2(8,II,2) 272
IOUT(12,II)=IPD2(8,II,4) 273
IOUT(13,II)=IPD2(6,II,3) 274
IOUT(14,II)=IPD2(6,II,4) 275
IOUT(11,13)=IOUT(11,13)+IOUT(11,II) 276
IOUT(12,13)=IOUT(12,13)+IOUT(12,II) 277
IOUT(13,13)=IOUT(13,13)+IOUT(13,II) 278
IOUT(14,13)=IOUT(14,13)+IOUT(14,II) 279
190 CONTINUE      280
DO 80 II=1,13     281
ISL=0             282
DO 120 JJ=1,14,2  283
IF(IOUT(JJ+1,IT).LE.0) GO TO 120 284
ISL=ISL+IOUT(JJ+1,IT) 285
IOUT(JJ,II)=IOUT(JJ,II)*10/IOUT(JJ+1,II) 286
120 CONTINUE      287
IF(ISL.GT.0) WRITE(9,2007) XPA(II),(IOUT(I,II),I=1,14) 288
80 CONTINUE      289
IF(ISL.GT.0) WRITE(8,2011) RAA,FLA,IMNA,IDL, (IOUT(I,13),
+I=1,14) 290
2011 FORMAT(1X,F8.4,F8.3,,F8.1,I4,(1X,7(I6,I3))) 291
2007 FORMAT((1X,F6.1,5(I6,I3),2(I7,I4))) 292
180 CONTINUE      293
170 CONTINUE      294
GO TO 110        295
100 CONTINUE      296
WRITE(8,2002) TCT4 297
2010*1WRITE(6,2002) ICT4 298
2002 FORMAT(1X,I5,* RECORDS READ FROM EFILE*) 299
T2=SECOND(TTT)-T1 300
WRITE(8,2003) T2 301
2003 FORMAT(2X,*READ TIME FOR ORBIT IS*,F10.3) 302
GO TO 50        303
110 CONTINUE      304
ENDFILE1         305
WRITE(6,2009) ICT1,ICT2 306
WRITE(8,2009) ICT1,ICT2 307
2009 FORMAT(2X,*END OF RUN STATISTICS*
+2X,I5,* RECORDS READ FROM EFILE*/
+2X,I5,* RECORDS WRITTEN TO EFILE*)
T2=SECOND(TTT)-T0 308
WRITE(8,2005) T2 309
2005 FORMAT(2X,*TOTAL PROCESSING TIME FOR S3SADE IS*,F10.3)
END               310

```

```

SUBROUTINE JNPE3(IMAT,TDA,IP01,IP02,IFLG) 316
***** 317
C 1977 SUBPROGRAM. E. HOLEMAN. LAST ALTERED 18 JAN 77. 318
C FROM UNPREF 18 JAN 77. 319
***** 320
***** 321
***** 322
C JNPACKS S3-2 EFILE DATA FILE INTO PITCH ANGLE QTST. MATRICES. 323
***** 324
C***** 325
DIMENSION IMAT(1),TDA(1),IP01(13,12,2),IP02(6,12,4) 326
DATA ICT4 /3/ 327
IWC=IFLG 328
IFLG=-1 329
ICT4=ICT4+1 330
CALL AUTO3(TDA,IMAT,IWC,JW00,KW00) 331
KW0=KW00+1 332
IF(IWD.NE.15) GO TO 10 333
CALL AUTO3(IP01,IMAT(KW0),TWD,JW00,KW00) 334
KW0=KW00+KW0 335
IF(TWD.NE.156) GO TO 10 336
CALL AUTO3(IP01(1,1,2),IMAT(KW0),IWD,JW00,KW00) 337
KW0=KW00+KW0 338
IF(IWD.NE.156) GO TO 10 339
CALL AUTO3(IP02,IMAT(KW0),TWD,JW00,KW00) 340
KW0=KW00+KW0 341
IF(IWD.NE.95) GO TO 10 342
CALL AUTO3(IP02(1,1,2),IMAT(KW0),IWD,JW00,KW00) 343
KW0=KW00+KW0 344
IF(IWD.NE.95) GO TO 10 345
CALL AUTO3(IP02(1,1,3),IMAT(KW0),TWD,JW00,KW00) 346
KW0=KW00+KW0 347
IF(IWD.NE.95) GO TO 10 348
CALL AUTO3(IP02(1,1,4),IMAT(KW0),IWD,JW00,KW00) 349
KW0=KW00+KW0-1 350
IF(IWD.EQ.95) GO TO 20 351
10 CONTINUE 352
WRITE(6,2019) ICT4 353
2019 FORMAT(1X,*CANT READ RECORD*,I5) 354
RETURN 355
20 CONTINUE 356
IF(KWD.NE.IWC.AND.IWC.GT.0) GO TO 10 357
IFLG=KWD 358
RETURN 359
END 360

```

```

SUBROUTINE JNPFF(IMAT,IDA,IP01,IP02,IFLG)          361
DTMENSION IMAT(1),IDA(1),IP11(1),IP12(1,12,4)      362
DATA ICT4 /2/
IFLG=IFLG
IFLG=-1
ICT4=ICT4+1
CALL AUTOOC(IDA,IMAT,IWD,JWDD,KWDD)            363
KWDD=KWDD+1
IF(IWD.NE.15) GO TO 10                            364
CALL AUTOOC(IP01,IMAT(KWD),IWD,JWDD,<WDD)        365
KWDD=<WDD+<WD
IF(IWD.NE.156) GO TO 10                            366
CALL AUTOOC(IP02,IMAT(KWD),IWD,JWDD,<WDD)        367
KWDD=<WDD+<WD
IF(IWD.NE.35) GO TO 10                            368
CALL AUTOOC(IP02(1,1,2),IMAT(KWD),IWD,JWDD,KWDD)  369
KWDD=<WDD+<WD
IF(IWD.NE.95) GO TO 10                            370
CALL AUTOOC(IP02(1,1,3),IMAT(KWD),IWD,JWDD,KWDD)  371
KWDD=<WDD+<WD
IF(JWD.NE.95) GO TO 10                            372
CALL AUTOOC(IP02(1,1,4),IMAT(KWD),IWD,JWDD,KWDD)  373
KWDD=<WDD+<WD-1
IF(IWD.EQ.95) GO TO 20                            374
10 CONTINUE                                         375
WRITE(6,2013) ICT4                               376
2013 FORMAT(1X,*CANT READ RECORD*,15)             377
RETURN                                              378
20 CONTINUE                                         379
IF(KWD.NE.TWD.AND.TWD.GT.0) GO TO 10            380
TFLG=KWD
RETURN                                              381
END                                                382
                                         383
                                         384
                                         385
                                         386
                                         387
                                         388
                                         389
                                         390
                                         391
                                         392
                                         393

```

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SUBROUTINE PACEF(IMAT, IDA, IPD1, IPD2, IFLG)	394
DIMENSTON IMAT(1), TDA(1), TP01(1), IPT2(8,12,4)	395
DATA ICT4 /0/	396
ICT4=ICT4+1	397
CALL AUTCD(TDA, IMAT, 15, JWDD, KWDD)	398
KWD=KWDD+1	399
CALL AUTCD(IPD1, IMAT(KWD), 156, JWDD, KWDD)	400
KWD=KWD+KWDD	401
CALL AUTCD(IPD2, IMAT(KWD), 96, JWDD, KWDD)	402
KWD=KWD+KWDD	403
CALL AUTCD(IPD2(1,1,2), IMAT(KWD), 96, JWDD, KWDD)	404
KWD=KWD+KWDD	405
CALL AUTCD(IPD2(1,1,3), IMAT(KWD), 96, JWDD, KWDD)	406
KWD=KWD+KWDD	407
CALL AUTCD(IPD2(1,1,4), IMAT(KWD), 96, JWDD, KWDD)	408
KWD=KWD+KWDD-1	409
IFLG=KWD	410
RETURN	411
END	412

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FILZ2CE //
 FTLZ2CE //

APPENDIX C

HEADING S73-2 REFERS TO SATELLITE S3-2

HEADING S73-3 REFERS TO SATELLITE s3-3

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.16	HMIN = 512.	R = .1971	B/BEQ = .9993	EQPA = 90.00
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 8.0 -52.0 +2.0
90 .8824	.360 .2256	.127 .4289	.115 .3877	.072 .3897 .054 10.2 +.007 .336
0 4.920	1.55 2.272	.751 3.588	.636 3.247	.406 4.254 .326 58.8 3.600 .223
L = 1.16	HMIN = 440.	R = .2123	B/BEQ = 1.0136	EQPA = 33.34
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 10.4 1.00 0.00
90 .0865	.087 .1671	.075 .1066	.038 .2591	.043 .2861 .031 20.8 .2375 .021
0 .6967	.402 1.639	.438 1.364	.227 2.060	.227 2.113 .159 124.0 1.839 .116
L = 1.16	HMIN = 358.	R = .2076	B/BEQ = 1.0417	EQPA = 78.45
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 7.0 1.30 0.30
90 0.00 1.00	.2566 .057	.0913 .053	.036 0.00	.173 .027 11.6 .1671 .015
0 .4269	.427 .2166	.217 .6225	.235 .7799	.184 .8262 .136 57.0 .7336 .092
L = 1.16	HMIN = 243.	R = .2155	B/BEQ = 1.0870	EQPA = 73.57
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 8.0 1.20 0.00
90 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 10.4 .0138 .011
0 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 57.0 .1070 .038
L = 1.16	HMIN = 154.	R = .2215	B/BEQ = 1.1115	EQPA = 71.34
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 2.2 1.10 0.00
90 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 .0109 .011 8.3 +.2-5 +.7-
0 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 .027 .027 51.4 .149 .015
L = 1.16	HMIN = 26.	R = .2314	B/BEQ = 1.1612	EQPA = 68.13
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 9.6 .01 0.00
90 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 14.4 1.00 0.00
0 .3497	.350 0.00	0.00 0.00	0.00 0.00	0.00 0.00 0.00 0.00 83.8 916.5 92.4

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.17	HMIN = 556.	B = .1930	B/BEO = .9963	EQPA = 91.00
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-101.
7 .0817 .782	0.11 0.00	0.00 0.00	0.10 1.01	.0421 .012 18.4 .1272 78-4
90 .9191 .205	.8347 .129	.5695 .097	1.295 .184	1.587 .063 30.2 1.257 .0-0
0 6.232	1.01 7.504	.787 .903	.453 11.19	.435 12.90 .327 174.8 11.16 .221
L = 1.17	HMIN = 437.	B = .2022	B/BEO = 1.0465	EQPA = 77.54
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-101.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	.0210 .015 6.8 .111- 31-4
90 0.00 0.00	.0919 .092	.1702 .076	.2500 .061	.3123 .050 8.6 .271- .335
0 2.739	1.22 1.396	.624 1.512	.419 2.365	.357 3..37 .286 53.0 2.618 .19-
L = 1.17	HMIN = 351.	B = .2075	B/BEO = 1.0739	EQPA = 74.73
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-101.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 .011 6.0 .111- .111
90 .1471 .147	.1634 .116	.0681 .048	.0551 .032	.1250 .030 9.2 .1057 .021
0 1.037	.733 .7917	.457 .3183	.184 .8972	.216 1.171 .173 56.0 .3736 .111
L = 1.17	HMIN = 241.	B = .2153	B/BEO = 1.1114	EQPA = 71.54
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-101.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 1.00 8.5 .101- .010
90 .0981 .098	.060 0.00	0.00 0.00	0.00 0.00	.0147 .015 0.00 0.00 11.4 533-7 -5-1
0 .3976 .398	0.00 0.00	0.00 0.00	0.00 0.00	.1244 .072 .0329 .0-1 70.6 .2870 .031
L = 1.17	HMIN = 157.	B = .2214	B/BEO = 1.1341	EQPA = 69.33
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-101.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 2.5 .030 .030
90 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 5.6 .100 .100
0 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 33.2 1.00 1.00
L = 1.17	HMIN = 55.	B = .2290	B/BEO = 1.1761	EQPA = 57.24
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-101.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	.0123 .012 5.0 778-5 78-4
90 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 5.8 1.30 1.30
0 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	-.18 0.00 38.8 1.00 0.00

SATELLITE S73-2. ENERGY SPECTRUM LISTING

SATELLITE S73-2. ENERGY SPECTRUM LISTING

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.20	HMIN = 712.	B = .1821	R/NEO = 1.001F	EQPA = 87.75
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	30.-100.
7 0.00 0.00	8.00 0.00	9.00 0.00	0.00 0.00	0.00 0.00
90 2.205 .991	1.878 .475	3.757 .536	5.765 .494	9.188 .376
9 29.03 5.93	19.85 3.47	74.02 2.93	76.44 3.40	94.75 2.35
				24.27 77.93 1.37

L = 1.1° HMIN = 634. R = .1°66 B/BEO = .9907 EQPA = 3.0°
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 1.7-100.
7 .0049 .007 .019 .019 .026 .019 .0572 .015 .103 .015 35.0 .1745 31+-
90 1.197 .175 1.348 .175 1.604 .095 2.452 .068 -.34 .079 52.8 2.925 .046
0 10.16 .955 11.53 .722 11.67 .467 22.10 .445 34.36 .397 327.2 2.350 .281

L = 1.17 HMIN = 539. n = .1925 R/BED = .9886 EQPA = 30.00
 RA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 0.-100. T 5.5-100.
 7 .0215 .022 .030 .029 .79-5 48-4 .0152 52-4 .035 64-4 53-2 .236 39-4
 90 .7843 .113 .7849 .077 .7808 .051 1.297 .345 1.700 .337 43-0 1.389 .024
 0 6.283 .581 5.233 .413 .504 .292 11.35 .243 15.56 .277 53.4 12.55 1.35

L = 1.16 HMIN = 426. B = .2013 B/B50 = 1.0049 EDPA = 36.31
 DA/EGY = 5.5-8. 8.-17. 13.-25. 25.-50. 30.-100. T 3.5-100.
 0.67 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 90 .1741 .058 .2177 .043 .1960 .026 .7249 .024 .3-81 .018 32.2 .3072 .012
 91 .1572 .316 1.921 .240 1.764 .149 3.036 .125 2.173 .033 45.1 .2635 .091

L = 1.15 HMIN = .333 R = .2071 R/REQ = .9942 EQPA = 3.00
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T = 7.-100.
 7 .0263 .025 .001 .0.00 .0.00 .0.00 .0.00 .0.00 .0.00 .0.00 .0.00
 99 .0460 .027 .0613 .023 .0817 .017 .0556100-4 .0687 .74-4 .88-6 .639 3-4-
 2 .1126 .279 .3372 .096 .4238 .070 .5883 .057 .5745 .10-0 .526-2 .335-2 .22

L = 1.14 HMTN = 236 R = .2143 P/REO = 1.0207 EQPA = 91.92
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 1.5-100.
 7 0.07 0.20 0.00 0.20 7.00 0.00 0.20 0.01 0.10 56.4 1.12 2.30
 90 0.600 0.030 0.00 0.00 455-5 46-4 959-5 39-4 0.103 29-4 93.8 0.104 21-4
 0 0.3150 0.129 0.251 0.030 0.0555 0.025 0.108 0.024 0.045 0.016 54.9 -0.178 0.12

L = 1.13 HMIN = 128. B = .2221 B/BEO = 1.1166 EQPA = 37.06
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 3.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

L = 1.11 HMIN = 16. R = .2296 R/REQ = 1.0013 EQLA = 37.37
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 10.5-100.
7 0.00 0.00 0.00 0.00 0.00 1.00 15E-5 11-4 36.2 319.5 57-5
90 0.00 0.00 0.00 0.00 0.00 967-E 97-5 0.00 0.00 152.8 295-c 25-5
0.00649 0.046 0.72 0.02 1.00 0.00 980-5 57-4 -.03 0.00 830.8 -51-5 19-5

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.2-1.3

L = 1.29	HMIN = 1148.	R = .1485	B/BEQ = 1.0107	EQPA = 34.09
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 4.412 1.47 .7353 .520 2.145 .573 15.83 .881 25.3+ .959 2.+ 15.56 .520				T 3.5-100.
00 1.96.1 5.51 44.21 1.91 62.46 1.65 49.60 1.02 31.32 .537 8.0 43.19 .458				
0 1374. 30.5 476.3 12.8 903.1 10.9 557.3 6.21 60.10 1.44 +2.0 341.2 2.50				
L = 1.27	HMIN = 1035.	R = .1568	B/BEQ = 1.0302	EQPA = 30.1-
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	FJ.-100.
7 1.961 1.400 .4257 .128 7.204 .251 9.980 .313 12.53 .233 17.0 9.43+ .147				T 3.5-100.
90 59.75 1.85 25.70 .930 47.2+ .652 44.53 .452 27.99 .239 31.6 37.91 .215				
0 572.3 9.43 252.6 4.43 -76.9 3.95 427.4 2.60 193.1 1.25 135.8 3.6.4 1.13				
L = 1.24	HMIN = 934.	R = .1627	B/BEQ = .9973	EQPA = 90.03
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.471 1.329 .3803 .130 1.200 .124 5.053 .172 7.039 .163 21.4 5.736 .102				T 3.5-100.
90 29.45 .776 15.41 .324 32.42 .364 36.30 .269 23.68 .153 73.6 23.32 .122				
0 232.1 4.10 139.2 2.25 319.5 2.19 367.9 1.63 206.2 .850 +02.5 261.5 .706				
L = 1.23	HMIN = 829.	R = .1698	B/BEQ = .9986	EQPA = 90.01
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .6170 .118 .1050 .035 .3567 .040 2.211 .072 3.2+0 .058 65.8 2.477 .138				T 3.5-100.
90 9.177 .332 7.405 .211 17.67 .217 24.85 .173 19.53 .111 120.0 19.56 .080				
0 76.97 1.76 66.72 1.15 165.8 1.18 242.9 .990 191.0 .610 721.0 131.+- .450				
L = 1.21	HMIN = 728.	R = .1770	B/BEQ = 1.0-31	EQPA = 36.31
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .2451 .074 .0865 .071 1.680 .029 .7591 .041 1.200 .036 66.4 .1920 .223				T 3.5-100.
90 4.509 .219 4.199 .151 9.460 .145 15.39 .133 14.11 .091 130.0 12.57 .061				
0 39.75 1.24 35.21 .829 7.98 .29 144.7 .752 142.6 .527 744.2 126.4 .361				
L = 1.23	HMIN = 674.	R = .1851	B/BEQ = 1.0913	EQPA = 73.19
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	FJ.-100.
7 .3240 .090 .0117 .012 .0613 .018 2.413 .02- .6958 .031 60.0 .+163 .116				T 3.5-100.
90 2.403 .210 2.489 .153 4.923 .137 10.69 .135 10.02 .095 81.8 9.392 .066				
0 19.87 1.09 21.19 .796 43.42 .737 97.29 .769 100.5 .554 432.1 33.13 .368				
L = 1.22	HMIN = 535.	R = .1921	B/BEQ = 1.1215	EQPA = 70.73
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0788 .045 .0147 .015 .0370 .014 .0936 .016 .1411 .015 53.6 .1016 86+-				T 3.5-100.
90 1.454 .153 1.494 .108 1.730 .072 4.483 .082 5.539 .054 96.5 +.510 .043				
0 11.76 .779 11.24 .549 15.63 .409 37.74 .440 50.93 .361 564.4 +1.06 .233				
L = 1.24	HMIN = 436.	R = .2000	B/BEQ = 1.2083	EQPA = 65.47
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00 0.0163 638-5 64-4 .0717 .016 .0306 69-4 45.6 .1358 55-4				T 3.5-100.
90 .4922 .098 .7353 .084 .3447 .061 2.072 .063 2.650 .052 74.2 2.096 .033				
0 5.590 .614 5.846 .446 7.552 .329 17.09 .343 25.17 .295 424.0 19.17 .186				
L = 1.24	HMIN = 349.	R = .2074	B/BEQ = 1.2591	EQPA = 63.02
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00 0.00 0.00 .0123 .012 639-5 64-4 .0337 .010 24.0 .1211 39-4				T 3.5-100.
90 .1730 .071 .210 1.056 .2592 .039 .3853 .034 6.66 .032 +9.2 +.412 .019				
0 1.840 .436 1.873 .306 2.284 .220 3.840 .198 4.099 .145 284.8 3.616 .099				
L = 1.23	HMIN = 247.	R = .2151	B/BEQ = 1.2681	EQPA = 62.62
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00 0.00 0.00 .0117 .011 0.00 0.00 0.00 0.00 0.00 0.00 31.0 125-5 13-4				T 3.5-100.
90 .0342 .034 .0400 .028 .3184 .011 .0416 .011 .0636 95-4 +8.6 .0536 66+-				
0 2.103 .149 .3722 .141 -.02 0.00 .5297 .075 .4697 .050 274.0 +148 .034				

SATELLITE ST3-2. ENERGY SPECTRUM LISTING

L = 1.2-1.3

L =	1.23	HMIN =	129.	R =	.2270	B/REQ =	1.3342	EQPA =	59.37
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.00	0.00	0.00	0.00	0.00	0.00	162-5	16-4	+3.0 315-2 92-8
90	0.00	0.00	0.00	0.00	528-5	53-4	267-5	27-4	254-5 18-4 57.2 272-5 14-4
0	.0827	.083	0.00	0.00	.0742	.025	.0421	.019	418-3 -2-4 347.3 .0199 63-4

L =	1.23	HMIN =	19.	R =	.2327	B/REQ =	1.3991	EQPA =	57.72
PA/EGY=	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-8.2 0.12 0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.2 0.00 0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	.159	.011	40-2 -3-4 356.4 629-5 36-4

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.3-1.4

L = 1.34 HMIN = 1236. R = .1432 B/BEQ = 1.0980 EQPA = 72.52
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 5.392 .727 4.622 .493 23.59 .694 37.10 .674 28.81 .404 13.8 23.55 .274
90 467.3 7.24 81.91 2.00 81.14 1.33 52.60 .718 35.87 .419 14.4 53.85 .402
0 3621. 34.9 788.2 11.5 264.9 6.84 240.9 2.84 23.15 .942 36.6 313.3 1.67
L = 1.33 HMIN = 1152. R = .1494 B/BEQ = 1.1251 EQPA = 71.52
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 2.041 .930 3.595 .574 17.11 .865 33.30 .835 21.13 .557 6.4 21.2 33.8
90 247.7 5.29 64.94 2.08 65.54 1.29 50.57 .704 32.59 .414 13.3 51.14 .331
0 2110. 27.5 509.3 9.67 576.4 6.64 228.9 2.90 15.1 1.70 79.4 30.1 1.71
L = 1.35 HMIN = 1023. R = .1605 B/BEQ = 1.2523 EQPA = 63.31
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 3.529 1.02 0.00 0.00 0.127 .685 17.30 .921 13.09 .566 3.4 11.22 .355
90 101.3 4.07 40.53 1.93 55.11 1.45 42.96 .793 27.62 .451 9.3 33.67 .414
0 1001. 25.4 385.4 10.7 548.4 4.31 350.9 4.61 21.4 2.55 48.6 327.2 2.27
L = 1.34 HMIN = 933. R = .1665 B/BEQ = 1.2709 EQPA = 52.53
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 1.384 .346 .3483 .116 2.974 .231 7.173 .242 11.09 .257 18.7 3.501 .135
90 87.83 1.80 30.11 .784 45.97 .653 39.33 .375 24.81 .222 37.2 33.16 .186
0 814.5 10.2 283.7 4.30 .62.8 3.55 42.24 2.3. 16.4 1.04 223.2 233.4 1.02
L = 1.33 HMIN = 841. R = .1738 B/BEQ = 1.3143 EQPA = 52.71
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 .8403 .297 .2153 .097 1.818 .193 4.611 .220 8.22. .216 14.6 3.316 .115
90 42.94 1.45 20.72 .579 75.11 .562 34.76 .400 21.92 .228 32.0 27.36 .132
0 340.0 7.30 175.6 3.67 328.7 3.23 352.2 2.33 159.6 1.12 138.8 236.3 .961
L = 1.33 HMIN = 736. R = .1823 B/BEQ = 1.3453 EQPA = 58.17
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 1.050 .332 1.879 .311 .3342 .096 1.698 .151 3.487 .146 12.4 2.353 .136
90 15.80 .866 9.986 .487 23.09 .446 27.43 .367 18.41 .200 31.2 21.35 .163
0 110.3 4.23 60.16 2.21 220.5 2.75 295.7 2.19 17.4 1.20 178.2 215.6 .941
L = 1.35 HMIN = 646. R = .1905 B/BEQ = 1.4333 EQPA = 55.15
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 .1634 .116 0.00 0.00 .1451 .048 .4412 .062 1.487 .078 17.2 36.36 .047
90 7.099 .600 5.806 .384 11.17 .331 17.78 .305 13.65 .193 28.8 13.35 .134
0 61.64 3.24 48.15 2.03 109.1 1.98 178.7 1.76 133.1 1.06 169.3 136.1 .735
L = 1.33 HMIN = 532. R = .1976 B/BEQ = 1.4913 EQPA = 55.25
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 .1987 .099 .0506 .034 .034 .017 .1144 .022 .424 .033 35.8 2.356 .016
90 2.727 .289 2.431 .191 3.956 .164 8.511 .160 8.915 .110 49.7 3.11. .031
0 17.09 1.29 17.68 .936 32.18 .816 79.48 .883 84.51 .644 235.2 71.35 .431
L = 1.34 HMIN = 435. R = .2059 B/BEQ = 1.5682 EQPA = 52.99
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 0.00 0.30 0.00 0.00 0.01-5 90-4 .0389 .013 .0735 .012 33.2 .1527 79-4
90 1.054 .161 1.097 .117 1.289 .093 3.162 .091 4.00. .076 56.8 2.934 .045
0 10.72 .967 9.430 .640 11.38 .455 26.48 .478 39.90 .417 333.6 31.35 .264
L = 1.33 HMIN = 351. R = .2126 B/BEQ = 1.6046 EQPA = 52.13
PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 .0774 .077 0.00 0.00 0.00 0.00 .0155 .011 .0123 64-4 19.0 .0143 54-5
90 .3945 .119 4.902 .293 .4631 .057 .7790 .056 1.140 .048 39.8 .0337 .029
0 2.758 .602 4.882 .568 4.059 .330 6.014 .260 3.35. .239 222.8 7.169 .157

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.3-1.4

L = 1.33 HMIN = 240. B = .2215 B/BEQ = 1.6493 EQPA = 31.1-
 PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 7.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 15.6 0.00 0.00
 90 .0566 .057 .057 .076 .0211 .015 .2101 .033 .1152 .017 28.6 .1273 .013
 0 .8743 .391 .4425 .198 .2217 .090 2.137 .193 1.381 .111 154.2 1.386 .090

L = 1.34 HMIN = 124. B = .2317 B/BEQ = 1.7965 EQPA = 48.25
 PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 7.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 23.8 0.00 0.00
 90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 159.5 19.4 37.8 2.6-5 15--
 0 0.00 0.00 0.00 0.00 .0565 .040 .0135 .014 .0273 .014 213.0 .0252 35--

L = 1.34 HMIN = 43. B = .2386 B/BEQ = 1.8460 EQPA = 17.39
 PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 6.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 29.8 0.00 0.00
 90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 39.6 0.00 0.00
 0 .1220 .122 0.00 0.00 0.00 0.00 .0126 .013 631-5 33- 233.4 337-3 37--

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.4-1.5

L = 1.45	HMIN = 1217.	R = .150+	B/REQ = 1.4746	EQPA = 55.4+
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 3.595 7.65	3.105 .594	.674 .421	.21.05 .622	17.73 .330 6.6 1.30 .257
90 245.9 6.74	77.55 2.29	.68.44 1.45	.45.68 .781	.25.43 .412 10.8 4.42 .40
0 2491. 34.7	702.2 12.9	735.7 3.93	308.8 3.86	91.16 1.47 60.6 372.4 2.75
L = 1.40	HMIN = 1160.	R = .1527	B/REQ = 1.3474	EQPA = 59.48
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 2.941 2.08	0.00 0.00	2.451 .867	37.21 2.34	.25.92 .976 1.2 31.30 1.01
90 245.6 11.0	67.40 4.05	72.81 2.73	49.19 1.97	.29.35 1.48 2.4 4.56 .521
0 2663. 80.3	694.3 29.0	783.7 19.9	51.58 3.39	-4.24 1.00 12.4 214.5 3.54
L = 1.45	HMIN = 1039.	R = .1647	B/REQ = 1.6114	EQPA = 51.33
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 2.101 .664	.1873 .184	2.502 .357	7.668 .401	7.720 .288 6.2 7.338 .215
90 97.55 3.45	41.25 1.74	.45.34 1.28	.38.60 .714	.20.92 .413 1.2 31.37 .346
0 891.7 20.1	376.7 9.39	-46.6 -6.49	357.9 4.03	177.4 1.99 63.8 240.3 1.87
L = 1.44	HMIN = 947.	R = .1718	B/REQ = 1.6497	EQPA = 51.13
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 .4902 .490	.1838 .184	.3064 .217	8.294 .494	6.41 .318 3.8 7.412 .277
90 77.02 2.56	26.72 1.18	37.42 .939	31.85 .625	19.21 .307 14.0 2.25 .270
0 713.1 16.5	274.6 7.24	-14.7 5.74	276.1 3.25	159.4 1.73 76.2 2.2-3.2 1.57
L = 1.45	HMIN = 838.	R = .1810	B/REQ = 1.7526	EQPA = 49.05
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 1.176 .594	.3676 .212	.3064 .187	1.303 .168	3.013 .231 5.6 2.223 .12-
90 39.71 2.42	19.74 1.15	27.76 .823	27.88 .585	16.62 .333 11.2 22.41 .279
0 259.6 10.4	165.7 5.99	272.1 4.96	316.4 3.67	162.0 1.91 67.4 230.5 1.59
L = 1.44	HMIN = 755.	R = .1870	B/REQ = 1.7771	EQPA = 49.52
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 .1838 .184	.0817 .082	.2828 .082	1.858 .158	2.46 .118 10.8 2.122 .337
90 18.24 1.04	12.99 6.72	13.79 .513	25.13 .410	15.03 .235 22.2 1.34 .177
0 175.6 5.39	113.0 3.65	19.0 3.02	231.0 2.34	151.2 1.34 123.0 173.6 1.12
L = 1.45	HMIN = 647.	R = .1965	B/REQ = 1.9.67	EQPA = 46.41
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 0.00 0.00	.0460 .046	.0276 .028	.0105 .071	.9232 .037 11.6 4.42 .132
90 11.20 .736	8.015 .443	8.292 .286	13.97 .257	11.95 .137 28.6 11.39 .12-
0 94.84 4.14	62.75 2.77	81.1 1.73	140.4 1.58	11.0 1.00 151.6 111.8 .729
L = 1.44	HMIN = 533.	R = .2050	B/REQ = 1.9563	EQPA = 45.64
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 .2674 .109	0.00 0.00	.0436 .020	.1854 .021	.2101 .023 32.5 1.233 .112
90 7.676 .411	3.738 .276	3.441 .164	6.663 .153	6.899 .100 39.6 0.944 .083
0 36.51 2.15	26.42 1.28	23.20 .861	64.76 .892	57.90 .648 234.4 53.4 0.441
L = 1.44	HMIN = 437.	R = .2126	B/REQ = 2.0203	EQPA = 44.71
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 0.00 0.00	0.00 0.00	.0292 .021	0.00 0.00	.0463 .013 22.4 1.278 .59-4
90 1.471 .252	1.759 .187	1.419 .117	2.669 .099	3.732 .083 37.8 3.144 .157
0 14.51 1.38	15.18 1.00	11.1 .557	24.31 .566	33.95 .474 219.4 25.35 .317
L = 1.43	HMIN = 346.	R = .2201	B/REQ = 2.0785	EQPA = 43.92
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	F0.-100. T 5-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	566-5 57-4	36-5 37-4 22.0 334-5 25-4
90 .4622 .139	.5744 .115	.6313 .077	.7273 .054	1.024 .044 35.2 .3173 .132
0 4.165 .749	5.203 .597	4.752 .370	6.068 .290	9.743 .252 212.2 7.538 .162

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.4-1.5

L = 1.45 HMIN = 248. B = .2293 B/BEO = 2.2342 EQPA = +1.39
 PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 14.2 1.0 1.00
 90 0.0545 0.054 0.0679 0.045 1.021 0.034 2.353 0.037 2.26 0.028 25.6 2.31 0.19
 0 0.5655 0.326 1.050 0.317 1.202 0.219 2.318 0.213 2.167 1.45 151.2 1.966 0.100

L = 1.43 HMIN = 176. B = .2373 B/BEO = 2.2362 EQPA = -1.37
 PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 7.4 0.00 0.00
 90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.0184 0.024 16.8 0.00 0.00
 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.042 0.1173 0.041 38.8 0.0777 0.025

L = 1.44 HMIN = 26. B = .2480 B/BEO = 2.3765 EQPA = -0.44
 PA/EGY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 28.2 0.00 0.00
 90 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 19.5 20.4 36.6 1.0 0.0 11.4
 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 20.0 3.7 0.0 37.4

***** FILZ4CE //// END OF LIST ////
 ***** FTLZ4CE //// END OF LIST ////

SATELLITE S23-1. ENERGY SPECTRUM LISTING													
L = 1.55	HMIN = 1248.	R = .1535	B/REQ = 1.8e17	EQPA = +6.80									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 .8836 .327 .3675 .154 .2254 .251 6.765 .31 8.157 .215 10.6 7.349 .165													
90 110.1 4.44 55.49 1.712 1.911 1.11 33.71 .879 16.3 .347 12.4 31.21 .338													
R 1465. 24.7 666.9 11.1 -.45 .416 275.0 3.26 78.0) 1.25 72.5 2-1.9 1.66													
L = 1.55	HMIN = 1179.	R = .1621	B/REQ = 1.9e5.	EQPA = -6.30									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 1.770 .378 .7675 .150 1.654 .225 4.142 .225 4.4-2 .165 11.4 3.860 .115													
90 110.1 4.71 57.3 1.12 2.251 1.19 27.78 .702 15.92 .325 11.5 21.78 .331													
R 944.4 17.7 479.2 9.16 797.1 5.70 293.3 3.36 137.3 1.62 75.2 2-2.2 1.57													
L = 1.55	HMIN = 1160.	R = .1693	B/REQ = 2.7336	EQPA = +4.53									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 .7675 .768 .3675 .280 .6897 .230 2.745 .767 7.796 .211 3.1 2.336 .165													
90 89.51 4.44 45.63 2.37 15.93 1.27 25.55 .659 14.37 .339 6.5 25.12 .332													
R 525.6 20.1 324.5 11.1 712.4 5.37 285.4 4.61 72.93 1.62 39.2 138.1 1.91													
L = 1.54	HMIN = 951.	R = .1767	B/REQ = 2.0536	EQPA = +4.17									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 .3288 .231 (.0) 0.01 .567 .153 1.324 .130 2.686 .163 7.3 1.891 .097													
90 57.79 2.45 2.07 1.07 22.67 .723 22.34 .465 13.11 .262 14.3 13.71 .213													
R 457.0 12.7 260.9 6.94 231.3 4.18 247.2 2.99 104.1 1.41 30.6 177.5 1.31													
L = 1.54	HMIN = 962.	R = .1845	B/REQ = 2.1715	EQPA = 42.73									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 .1838 .194 .2451 .173 .1021 .102 .9069 .140 1.275 .125 5.8 .3725 .061													
90 37.82 2.13 2.04 1.15 10.91 .512 19.75 .503 12.02 .272 11.5 1.38 .224													
R 368.7 12.6 196.1 6.72 164.2 3.91 189.0 2.88 112.2 1.52 57.2 151.9 1.32													
L = 1.55	HMIN = 726.	R = .1953	B/REQ = 2.377	EQPA = -1.17									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 .1471 .147 .7668 .067 .0234 .024 .3235 .056 .9146 .058 12.4 .3647 .042													
90 20.27 1.14 17.72 .614 .140 .357 13.04 .326 9.72 .135 21.0 13.07 .131													
R 185.1 6.42 107.0 3.80 76.62 1.93 108.9 1.58 64.86 .981 127.2 9.16 .754													
L = 1.55	HMIN = 645.	R = .2025	B/REQ = 2.4208	EQPA = 39.99									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 .0.00 0.00 0.00 0.00 0.00 1.00 .0840 .042 1.130 .041 0.2 1.139 .023													
90 2.478 1.12 10.00 .957 9.934 .431 6.342 .296 7.000 .212 12.2 3.173 .191													
R 97.03 6.21 51.59 3.53 56.14 2.14 84.53 1.82 78.28 1.24 73.4 77.24 .899													
L = 1.54	HMIN = 531.	R = .2112	B/REQ = 2.4762	EQPA = 39.45									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 0.00 0.00 0.00 0.00 0.00 1.01 919.5 92-4 .1.71 .006 16.4 .3807 .314													
90 7.698 .614 4.8-2 .340 7.927 .186 4.412 .158 4.163 .118 27.5 4.148 .076													
R 58.97 3.10 37.70 1.77 22.4 .878 37.13 .780 0.39 .569 177.2 37.99 .106													
L = 1.54	HMIN = 441.	R = .2180	B/REQ = 2.5261	EQPA = 39.39									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 0.01 1.01 0.00 0.00 0.00 1.00 865-5 61-4 .0199 03-4 35.6 .0131 39-4													
90 1.121 .735 2.311 .201 1.404 .110 2.036 .088 2.107 .054 42.3 2.338 .046													
R 23.79 1.69 19.71 1.08 11.84 .545 17.63 .459 23.46 .373 2-2.2 20.30 .254													
L = 1.55	HMIN = 340.	R = .2274	B/REQ = 2.7237	EQPA = 37.30									
PA/EGY=5.5-8.	R.-17.	17.-25.	25.-50.	50.-100.	T	.5-100.							
7 0.00 1.01 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 23.4 0.11 0.01													
90 1.731 .225 .731 .172 .504 .073 .7014 .051 7.37 .054 33.3 .2731 .03													
R 9.071 1.13 6.691 .653 .201 .391 5.736 .284 7.22 .231 206.5 .0.635 .157													

SATELLITE 873-2. ENERGY SPECTRUM LISTING

L = 1.54 HMIN = 239. R = .2349 R/BFO = 2.7433 EOPA = 37.17
PA/EGY= 5.5-F-A. R = .17. 13.-25. 25.-50. 50.-100. T .5-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90 1.0488 .077 .241 .097 .3568 .070 .2031 .037 .191 .026 .338 .164 .17
0 1.665 .585 1.847 1.474 .5624 .169 1.638 .184 1.492 .123 1.464 1.456 .39

L = 1.55 HMIN = 139. R = .2440 R/BFO = 3.9113 EOPA = 37.59
PA/EGY= 5.5-F-A. R = .17. 13.-25. 25.-50. 50.-100. T .5-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90 .4474 .047 .023 .026 .2249 .014 .0542 .014 .0053 .724 .346 .1300 0.00
0 1.474 .147 .074 .074 .3903 .052 .4790 .083 .141 .036 1.980 .0436 .031

L = 1.54 HMIN = 32. R = .2535 R/BFO = 2.9779 EOPA = 35.41
PA/EGY= 5.5-F-A. R = .17. 13.-25. 25.-50. 50.-100. T .5-100.
7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
90 .4744 .040 .023 .026 .2405 .014 .0420 .014 .0053 .224 .316 .2465 1.00
0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

SATELLITE 877-2. ENERGY SPECTRUM LISTING													
L = 1.64 HMIN = 1219. R = .1599 B/BEO = 2.2139 EQPA = 41.50	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .8403 .421 .7373 .322 .7001 .124 2.868 .267 .9191 .13. 5.3 1.274 .131	80 1.78 .3.15 82. 9.7.13 .4.17 1.47 23.94 .750 10.82 .337 9.3 23.57 .335												
1.966.3 27.2 479.7 13.5 792.7 6.73 205.1 4.81 132.2 2.25 38.0 211.8 2.07													
L = 1.67 HMIN = 1172. R = .1668 B/BEO = 2.4724 EQPA = 37.42	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.07 0.07 .1225 .123 0.0 0.0 3.147 .304 1.54 .114 -.8 1.572 .113	80 1.00 .3 4.49 57.45 .7.45 77.77 1.19 15.70 .524 9.284 .234 7.0 15.59 .322												
0 1080. 27.7 546.1 14.1 248.0 6.25 127.2 3.04 83.43 1.74 -.4 156.7 1.73													
L = 1.67 HMIN = 1239. R = .1763 B/BEO = 2.6226 EQPA = 36.13	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .7353 .735 .3676 .758 1.01 0.00 .4824 .160 1.337 .185 2.3 1.153 .127	80 54.64 3.72 47.34 2.71 15.17 .619 14.29 .547 6.397 .307 7.0 13.49 .274												
0 769.2 24.2 378.7 11.7 166.7 5.29 125.1 3.1 54.19 1.48 36.4 121.1 1.6													
L = 1.65 HMIN = 949. R = .1326 B/BEO = 2.6292 EQPA = 35.08	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.00 0.00 0.0 0.00 .0439 .044 .1471 .361 7.37 .118 4.4 1.24 .051	80 51.34 3.53 42.71 1.67 13.45 .677 11.71 1.77 6.13 .262 7.3 11.16 .238												
0 482.9 16.4 230.3 8.12 111.1 3.74 127.5 2.57 6.33 1.35 34.1 19.5 1.23													
L = 1.64 HMIN = 342. R = .1310 B/BEO = 2.6354 EQPA = 37.52	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.01 0.01 0.0 0.01 .0439 .044 .1471 .361 4.657 .176 7.6 2.538 .038	80 45.19 2.71 27.78 1.33 13.79 .628 11.35 .346 6.72 .181 11.4 11.57 .231												
0 301.4 11.6 158.1 5.94 111.1 3.19 125.0 2.34 6.83 1.26 35.2 19.3 1.09													
L = 1.64 HMIN = 767. R = .1945 B/BEO = 2.6218 EQPA = 36.53	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.00 0.00 0.0 0.00 .1768 .077 .0588 .042 2.353 .042 6.8 2.032 .034	80 33.89 1.51 17.93 .728 .43 .817 7.085 .246 4.694 .138 19.3 5.833 .113												
0 319.9 9.73 190.3 5.21 75.28 2.18 65.38 1.46 40.35 .791 36.6 55.31 .727													
L = 1.64 HMIN = 642. R = .2072 B/BEO = 2.9026 EQPA = 36.3-	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.00 0.00 0.0 0.00 .0383 .038 0.30 0.00 .0326 .015 9.1 1.331 .012	80 20.74 1.18 10.02 .558 0.008 .274 5.130 .212 3.24 .129 19.3 4.722 .037												
0 170.7 6.47 98.02 3.47 42.02 1.49 46.06 1.09 37.54 .694 113.8 45.64 .556													
L = 1.65 HMIN = 532. R = .2178 B/BEO = 3.1335 EQPA = 34.03	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 1.732 .482 0.00 0.01 0.01 1.00 0.00 0.00 817-6 82-4 9.0 1.605 .118	80 4.524 .493 5.791 .542 0.002 2.208 2.559 .148 2.73 .118 19.3 2.893 .08-												
0 57.72 4.10 57.17 2.90 23.54 1.24 23.16 .850 18.74 .550 32.0 23.14 .-33													
L = 1.64 HMIN = 423. R = .2240 B/BEO = 3.1727 EQPA = 34.15	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.01 0.00 0.0 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	80 4.809 .477 2.951 .239 1.524 .113 1.617 .080 1.443 .054 37.2 1.665 .142												
0 44.33 2.43 27.0 1.36 13.52 .621 12.69 .416 12.21 .239 212.4 1.17 .226													
L = 1.65 HMIN = 344. R = .2327 B/BEO = 3.3384 EQPA = 33.18	P/A/EGY= 5.5-9. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.												
7 .0.00 0.00 0.0 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	80 1.739 .307 1.591 .241 1.597 .046 1.725 .084 1.707 .055 17.3 1.7217 .11-												
0 17.73 1.93 11.67 1.32 6.048 .605 5.748 .406 6.133 .293 39.6 5.531 .22-													

SATELLITE 573-2. ENERGY SPECTRUM LISTING

SATELLITE 577-2. ENERGY SELECTUM LISTING

L =	1.76	HMIN =	1319.	R =	.1670	R/REQ =	2.72E9	EQPA =	37.25
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	140.7	14.9	128.6	5.16	51.97	1.73	11.42	7.47	4.013 .336
0	15P0.	57.2	774.0	27.6	370.4	10.4	91.91	4.12	60.73 .51
L =	1.76	HMIN =	1244.	R =	.1670	R/REQ =	2.72E9	EQPA =	36.73
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	152.9	6.12	93.69	3.91	27.77	7.98	13.15	5.22	4.657 .233
0	1295.	29.7	681.3	15.3	236.1	3.76	117.5	2.79	39.29 1.15
L =	1.76	HMIN =	1170.	R =	.1670	R/REQ =	2.72E9	EQPA =	35.36
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	144.1	4.72	57.7	2.77	27.71	9.73	11.32	5.75	4.213 .174
0	1182.	25.2	478.2	11.1	175.2	4.43	103.5	2.84	41.3 1.34
L =	1.77	HMIN =	1033.	R =	.1812	R/REQ =	3.27E9	EQPA =	33.95
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	70.44	4.12	62.03	2.74	14.61	7.76	6.722	3.37	3.183 .171
0	703.8	22.3	382.6	11.5	134.8	4.41	77.31	2.22	32.31 1.03
L =	1.75	HMIN =	921.	R =	.1894	R/REQ =	3.27E9	EQPA =	33.50
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	71.15	2.41	37.3	1.21	19.02	5.35	7.069	2.71	2.921 .140
0	647.8	14.3	297.6	7.17	82.87	2.47	59.18	1.56	**** 1.00
L =	1.75	HMIN =	831.	R =	.1972	R/REQ =	3.4E9	EQPA =	32.31
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	52.62	2.00	26.3	1.04	6.51	4.99	5.378	3.35	2.661 .132
0	558.1	17.5	223.2	7.82	61.37	2.58	47.17	1.52	20.2 .718
L =	1.74	HMIN =	725.	R =	.2053	R/REQ =	3.47E9	EQPA =	32.42
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	50.92	2.23	16.9	1.16	6.09	4.95	4.374	2.91	2.31 .147
0	318.9	12.9	158.6	6.47	47.0	2.27	40.75	1.52	23.91 .925
L =	1.79	HMIN =	675.	R =	.2147	R/REQ =	3.47E9	EQPA =	30.61
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	17.89	1.89	12.1	0.97	7.75	4.18	2.794	2.14	1.781 .121
0	182.2	9.90	90.18	5.16	74.33	1.96	24.37	1.14	15.51 .634
L =	1.75	HMIN =	589.	R =	.2228	R/REQ =	3.72E9	EQPA =	31.11
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	17.72	1.34	9.87	5.58	7.264	1.98	2.071	1.57	1.794 .075
0	174.2	6.42	74.05	3.37	22.45	1.21	17.32	0.73	12.74 .441
L =	1.73	HMIN =	437.	R =	.2283	R/REQ =	3.8E9	EQPA =	30.86
PA/EGY=	5.5-9.	R.-13.	13.-25.		25.-50.		50.-100.	T	5.5-100.
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90	5.91	0.961	0.00	0.00	0.00	0.00	0.00		
0	48.18	2.82	28.78	1.53	12.76	0.61	9.380	0.40	7.120 .254

C SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.73	HMIN = 742.	R = .2765	B/PEO = 3.9333	EOPA = 30.25
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 2.748	.746	1.115	.158	.6997 .37 .5027 .15 .133
0 20.55	1.83	14.78	1.10	.5557 .442 4.782 .283 3.587 .175 174.6 1.230 .152
L = 1.74	HMIN = 249.	R = .2449	B/PEO = .1-3,	EOPA = 23.12
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 .1471	.104	.2941	.104	.2299 .089 .2399 .043 .2142 .029
0 2.354	.795	3.211	.642	.217 .334 1.850 .218 1.537 .130 117.4 1.737 .157
L = 1.74	HMIN = 144.	R = .2533	B/PEO = 4.249,	EOPA = 23.12
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 .2753	.118	.224	.125	.032 .119 .832 .021 .021 .014 26.3 .142 .011
0 1.731	.567	.4398	.197	.-15 0.10 .6630 .120 .4-52 .063 163.3 .-732 .247
L = 1.74	HMIN = 23.	R = .2647	B/PEO = .1-4-80	EOPA = 26.31
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 .603	0.00	0.00	0.00	0.00 .159 .232 .013 66.6 .774 .29.4 .111 .424
0 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00

(SATELLITE 977-2. ENERGY SPECTRUM LISTING

L =	1.86	HMIN =	1704.	R =	.1627	R/REO =	3.3367	EQPA =	31.13
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.01	0.01	0.01	0.01	0.01	0.01	1.2	1.23	1.00
90	22.7	10.7	7.6	7.65	17.7	1.25	44.42	.800	1.587
0	1996.	56.8	533.7	24.4	131.7	7.43	60.07	3.65	18.93
								1.00	13.0
								123.4	2.7
L =	1.88	HMIN =	1247.	R =	.1654	R/REO =	3.6126	EQPA =	31.74
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.00	0.00	0.00	0.00	0.00	0.00	5.1	2.39	0.39
90	20.6	7.81	6.7	2.88	19.78	0.71	5.82	.414	1.34
0	1316.	34.7	477.2	14.5	142.1	5.18	55.73	2.25	13.67
								3.50	32.0
								131.2	1.56
L =	1.86	HMIN =	1139.	R =	.1763	R/REO =	3.6797	EQPA =	31.76
PA/EGY=	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.00	0.00	0.00	0.00	0.00	0.00	5.2	1.77	0.33
90	125.5	5.63	7.73	4.25	13.87	1.15	3.14	.446	1.735
0	990.2	40.1	497.5	27.0	148.2	7.17	63.71	3.12	14.13
								1.17	18.2
								30.65	2.11
L =	1.88	HMIN =	1048.	R =	.1876	R/REO =	3.7282	EQPA =	31.19
PA/EGY=	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.00	0.00	0.00	0.00	0.00	0.00	5.3	1.74	0.33
90	88.09	5.89	43.67	3.23	13.83	1.19	3.73	.331	1.41
0	955.8	31.5	318.3	13.8	33.74	4.75	46.70	2.47	17.23
								1.14	23.6
								73.51	1.35
L =	1.85	HMIN =	950.	R =	.1914	R/REO =	3.4935	EQPA =	31.45
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.00	0.00	0.00	0.00	0.00	0.00	5.3	1.62	0.33
90	101.9	3.39	40.65	1.98	9.05	.439	3.931	.184	1.345
0	684.4	14.7	304.6	6.97	33.49	2.34	38.77	1.12	12.33
								4.43	31.2
								61.67	.721
L =	1.85	HMIN =	869.	R =	.1983	R/REO =	4.0238	EQPA =	23.91
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.01	0.01	0.00	0.00	0.00	0.00	5.4	1.21	0.14
90	77.55	4.78	25.72	2.18	7.66	.649	3.500	.321	1.73
0	507.8	25.0	242.5	11.2	58.11	3.54	26.02	1.64	10.84
								7.74	28.2
								4.15	1.15
L =	1.85	HMIN =	737.	R =	.2092	R/REO =	4.2656	EQPA =	29.00
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.01	0.01	0.00	0.00	0.00	0.00	5.5	1.47	0.17
90	45.93	7.14	25.07	1.02	3.35	.375	1.935	.145	9.73
0	457.7	13.5	184.8	6.02	42.49	1.35	18.97	.487	8.791
								.410	74.2
								3.71	.616
L =	1.84	HMIN =	655.	R =	.2154	R/REO =	4.2759	EQPA =	28.92
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.01	0.01	0.00	0.00	0.00	0.00	5.6	1.13	0.14
90	12.82	4.07	14.4	1.99	7.77	.439	2.538	.277	8.716
0	301.2	10.1	140.4	9.51	7.43	3.71	23.78	1.03	6.465
								.239	25.2
								31.11	.955
L =	1.84	HMIN =	554.	R =	.2239	R/REO =	4.4446	EQPA =	28.32
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.01	0.01	0.00	0.00	0.00	0.00	5.7	1.03	0.00
90	22.53	2.74	8.578	0.95	7.002	.429	1.092	.151	5.760
0	186.3	13.7	88.76	6.45	29.14	2.71	11.10	.973	6.916
								.543	32.8
								19.83	.681
L =	1.87	HMIN =	441.	R =	.2378	R/REO =	4.8650	EQPA =	26.93
PA/EGY=	5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.	T	1.7-100.		
7	0.01	0.01	0.00	0.00	0.00	0.00	5.8	1.03	0.00
90	11.95	1.74	6.032	0.443	1.247	.145	0.8039	.039	4.667
0	97.40	5.27	40.03	2.46	1.061	.768	6.610	.434	3.645
								.422	101.2
								3.463	.262

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.84	HMTM = 354.	R = .2404	B/E0 = 4.8132	EOPA = 27.10
PAZEGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.0 1.00	1.00 1.00	0.00 0.00	787-5 794-4
90 4.044 4.61	3.241 2.007	1.177 1.125	4.357 2.744	2.019 3.020
0 50.61 3.07	24.04 1.52	7.720 5.9	4.543 2.937	2.143 1.161
				135.0 6.207 .17-
L = 1.85	HMTM = 25F.	R = .2492	B/E0 = 5.0775	EOPA = 26.35
PAZEGY= 5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 4.412 2.55	4.043 2.143	3.067 2.079	2.101 1.769	1.032 3.020
0 5.005 1.33	2.375 1.792	2.894 3.70	1.296 2.263	1.919 1.174
				56.0 1.234 .130
L = 1.84	HMTM = 148.	R = .2573	B/E0 = 5.1554	EOPA = 26.10
PAZEGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 4.044 4.03	3.110 3.000	3.255 2.118	2.8216 2.011	2.0860 3.020
0 5.005 2.22	2.870 1.94	1.022 2.064	2.922 1.78	2.281 1.164
				151.2 2.2692 .057
L = 1.83	HMTM = 3F.	R = .2679	B/E0 = 5.2744	EOPA = 27.31
PAZEGY= 5.5-8.	R.-17.	13.-25.	25.-50.	50.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90 4.044 4.03	3.110 3.000	3.000 2.100	2.245 2.012	2.012 3.020
0 5.005 2.22	2.870 2.07	2.021 2.077	2.073 1.197	2.042 36.0 1.030 .129

(C SATELLITE 872-2. ENERGY SPECTRUM LISTING

L = 1.04	HMIN = 1718.	R = .1643	B/REO = 3.8792	EQPA = 30.59
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
15	0.01 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90	0.00 0.00	0.00 0.00	18.63 2.35	2.794 .541
0	0.00 0.00	214°	177. 756.4	46.5 55.15 12.7 15.97 +.1
L = 1.04	HMIN = 1250.	R = .1774	B/REO = 3.3953	EQPA = 30.16
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	.2941 .234	.8824 .380	.2747 .144	.1113 .064
90	191.4 67.4	59.7 1	2.80 15.49	.018 3.356 .285
0	1001. 40.6	647.7 16.4	151.4 5.18	42.69 1.91 3.21 .632
L = 1.05	HMIN = 1156.	R = .1785	B/REO = 4.2272	EQPA = 29.10
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	170.7 10.1	0.10 0.00	0.00 1.00	0.00 0.00
90	198.5 12.1	77.1 7.1	3.43 1.17	2.341 .331
0	***** 0.00	573.3 26.7	131.4 7.16	28.54 2.63 4.85+ .728
L = 1.07	HMIN = 1247.	R = .1884	B/REO = 4.6803	EQPA = 27.63
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	0.07 0.00	0.00 0.00	0.00 0.00	0.245 .027
90	195.2 4.20	30.93 1.77	1.421 .430	2.630 .209
0	1268. 24.8	443.4 17.1	6.83 2.78	21.00 1.01 2.175 .264
L = 1.05	HMIN = 946.	R = .1358	B/REO = 4.6110	EQPA = 27.53
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	.1471 .147	0.00 0.00	0.00 0.00	0.00 0.00
90	129.4 7.67	35.11 2.47	2.74 .339	2.137 .148
0	387.4 18.7	332.0 7.71	46.91 2.25	22.34 .918 6.14+ .373
L = 1.06	HMIN = 862.	R = .2030	B/REO = 4.6746	EQPA = 26.33
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	.7352 .735	0.10 0.00	0.00 0.10	0.00 .0735
90	8.72 4.47	25.27 1.97	1.457 .578	2.279 .289
0	845.0 30.1	289.7 12.7	53.35 3.39	16.79 1.32 3.92+ .459
L = 1.06	HMIN = 771.	R = .2141	B/REO = 5.1587	EQPA = 26.04
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90	56.15 4.50	34.1 2.25	3.472 .421	1.765 .203
0	418.3 18.3	182.6 8.58	39.57 2.61	14.51 1.13 4.222 .431
L = 1.05	HMIN = 657.	R = .2213	B/REO = 5.3553	EQPA = 25.61
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00
90	21.95 7.74	24.75 2.44	1.523 .519	1.422 .264
0	317.3 22.0	124.5 9.75	22.38 2.67	5.935 1.11 3.141 .453
L = 1.05	HMIN = 537.	R = .2294	B/REO = 5.4747	EQPA = 25.30
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	0.00 0.00	0.00 0.10	0.00 0.00	0.00 0.00
90	22.51 1.67	3.972 .697	2.321 .225	9.069 .084
0	196.2 7.55	69.27 3.15	17.41 1.03	5.529 .505
L = 1.05	HMIN = 454.	R = .2352	B/REO = 5.5780	EQPA = 25.05
PA/EGYE	5.5-8.	8.-13.	13.-25.	25.-50.
7	0.02 0.00	0.00 0.00	0.00 0.10	865-5 87-
90	11.93 .951	8.021 .519	1.717 .158	7.904 .087
0	149.6 5.74	55.13 2.54	10.85 .722	6.419 .389

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 1.93	HMTN = 750.	B = .2440	R/PEO = 5.0107	EOPA = 24.27
PA/EGY= 5.5-8.	B.-13.	13.-25.	25.-50.	00.-100.
7 1.17E .340	8.03 7.00	0.0 0.10	0.00 0.01	46 -3 46-4 14.5 .13+ .35+-
90 5.303 .664	2.907 .743	.898 .117	.4779 .156	.2 13 .108 19.1 .2078 .237
0 31.72 2.92	23.47 1.72	1.240 .628	3.784 .213	1.006 .140 139.2 .4738 .15-
L = 1.95	HMIN = 224.	B = .2654	R/PEO = 6.1446	EOPA = 25.36
PA/EGY= 5.5-8.	B.-13.	13.-25.	25.-50.	00.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 18.8 .107 1.00
90 .7783 .222	.3036 .109	.2574 .034	.1225 .127	.016+ .01F 22.6 .123+ .011
0 5.806 1.16	4.800 .741	.8670 .204	1.043 .15+	.7-8+ .192 126.8 1.133 .151
L = 1.94	HMTN = 151.	B = .2610	R/PEO = 6.1429	EOPA = 23.31
PA/EGY= 5.5-8.	B.-13.	13.-25.	25.-50.	00.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 15.1 .103 1.00
90 .2451 .142	.1387 .039	.039 .01	.1625 .031	.0331 .011 18.5 .1711 .12
0 2.615 .227	.5271 .262	.1634 .034	.8892 .152	.4751 .079 110.8 .3131 .150
L = 1.95	HMTN = 37.	B = .2717	R/PEO = 6.1443	EOPA = 23.21
PA/EGY= 5.5-8.	B.-13.	13.-25.	25.-50.	00.-100.
7 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 18.4 .103 1.00
90 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 18.2 .0342 9.6+-
0 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00 113.4 .234+ .04-

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EMMANUEL COLL BOSTON MASS
ANALYSIS OF DATA FROM RESEARCH SATELLITES. (U)

JUL 78 E G HOLEMAN, A F DAVIS, M P HAGAN

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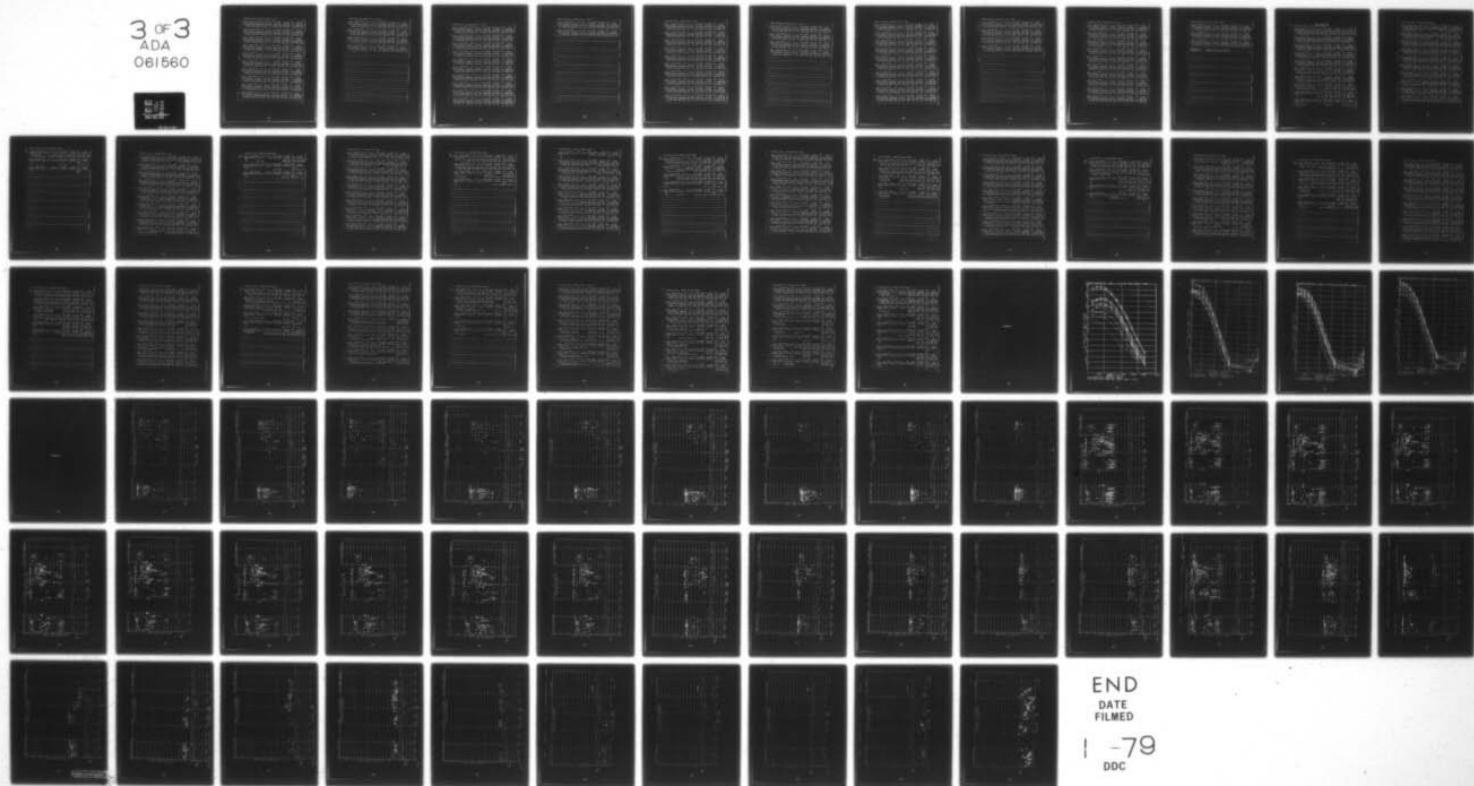
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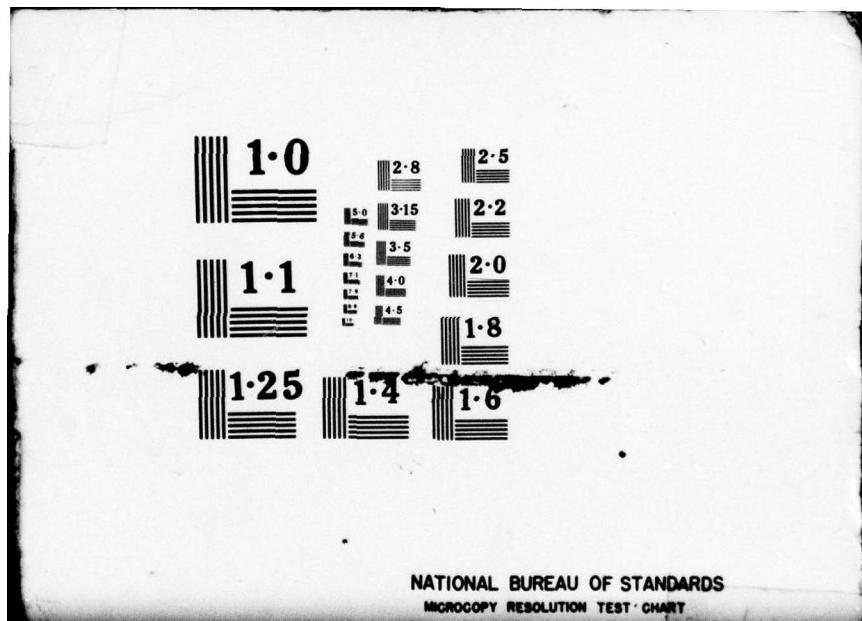
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SATELLITE S73-2 ENERGY SPECTRUM LISTINGS											
L = 2.58	HMIN = 1359.	R = .1833	A/REQ = 9.3683	EOPA = 18.46							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	1.4	3.00	0.00		
90 72.06	10.3	13.24	3.12	.451	.857	.5982	.268	.1733	.052	1.4	2.362
0 757.6	49.8	146.8	15.4	21.1	4.03	5.443	1.41	.7257	.363	8.4	34.37
L = 2.54	HMIN = 1343.	R = .1932	A/REQ = 10.0550	EOPA = 18.37							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	1.8	3.25	0.22		
90 81.25	5.47	11.47	1.30	1.321	.323	.4902	.110	.0598	.029	4.6	2.816
0 521.4	23.7	95.70	6.59	12.1	1.53	4.338	.684	.5289	.174	30.0	25.41
L = 2.52	HMIN = 1174.	R = .1963	A/REQ = 13.1531	EOPA = 18.24							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	1.8	3.26	0.03		
90 57.28	4.97	11.76	1.32	.4197	.204	.171	.074	.3430	.035	3.8	2.735
0 701.3	26.5	104.0	7.93	7.372	1.43	1.979	.511	.9935	.235	23.0	27.45
L = 2.53	HMIN = 1319.	R = .2093	A/REQ = 13.6807	EOPA = 17.65							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	2.2	19.5	1.95		
90 1.00 0.00	0.00	0.30	0.31	0.00	0.00	0.00	0.0	3.30	0.00		
0 23.33	29.0	0.00	0.30	0.31	0.00	2.903	2.05	2.907	1.45	1.4	3.089
L = 2.55	HMIN = 917.	R = .2183	A/REQ = 14.5657	EOPA = 17.16							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	4.6	9.73	5.07		
90 49.32	4.90	7.445	.827	.2271	.133	.7538	.136	.1349	.041	5.4	1.628
0 44.48	18.1	F3.22	4.53	5.344	.954	4.813	.656	1.525	.238	37.4	15.31
L = 2.52	HMIN = 344.	R = .2242	A/REQ = 11.5829	EOPA = 17.01							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	1.4	3.00	0.33		
90 41.37	4.52	7.843	1.39	.9191	.305	.4779	.133	.5.011	.332	3.4	5.332
0 327.4	25.4	54.92	6.50	7.222	1.61	5.896	.968	.59.31	.220	17.8	47.03
L = 2.53	HMIN = 732.	R = .2338	A/REQ = 12.1607	EOPA = 16.66							
PA/E3Y = 5.5-6.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	3.0	13.99	.32		
90 31.96	3.95	10.05	1.57	.2171	.171	.3309	.110	.0245	.025	3.4	1.335
0 306.4	22.2	55.00	6.48	5.442	1.24	3.338	.695	.83	0.00	19.4	11.39
L = 2.55	HMIN = 627.	R = .2435	A/REQ = 12.3974	EOPA = 15.15							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	8	0.30	E.06		
90 5.882	2.04	E.618	2.21	.754	.217	.1490	.049	0.00	0.00	1.8	.3458
0 186.6	27.8	49.76	16.2	2.254	1.31	.3529	.363	.3623	.257	7.6	7.578
L = 2.55	HMIN = 513.	R = .2527	A/REQ = 13.3882	EOPA = 15.85							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	1.2	0.30	0.03		
90 5.518	2.21	2.574	.973	[.21]	0.01	.1471	.147	0.03	0.00	1.2	.5511
0 154.5	23.0	19.96	6.32	1.512	1.07	1.244	.718	0.09	0.00	8.0	6.432
L = 2.57	HMIN = 49.	R = .2535	A/REQ = 14.8923	EOPA = 15.43							
PA/E3Y = 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
7 0.30 E.60	0.00	0.30	0.31	0.00	0.00	0.00	5.8	3.00	0.02		
90 14.22	1.87	2.757	.513	.2521	.107	.0936	.035	.1995	.038	8.4	.5928
0 35.34	7.52	16.40	2.76	2.722	.555	1.185	.265	1.325	.171	50.0	4.700

~~SATELLITE S73-2. ENERGY SPECTRUM LISTINGS~~

SATELLITE S73-2. ENERGY SPECTRUM TESTING										
L = 2.42	HMIN = 1229.	R = .1961	R/REQ = 11.3640	EOPA = 17.25						
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.735 .074	0.39 0.30	2.4	0.162 .013				
30 37.75	4.36	8.392	1.11 .325	.151 .5982	2.08 .0735	.052 3.2	1.799 .143			
6 571.9	28.8	76.28	7.37 5.141	1.23 2.467	.598 .5340	.192 19.8	29.44 .990			
L = 2.62	HMIN = 1132.	R = .2029	R/REQ = 11.7995	EOPA = 16.92						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	1.8	0.00 0.00				
30 75.37	5.26	2.941	1.31 .4193	.24 .4044	.122 .0231	.021 3.6	2.486 .161			
6 565.4	28.6	41.37	5.43 4.332	1.61 3.179	.663 .2755	.138 20.8	19.72 .931			
L = 2.62	HMIN = 1063.	R = .2073	R/REQ = 11.9560	EOPA = 16.81						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	4.4	0.146 -0.09				
30 88.33	5.10	8.676	1.13 .5331	.14 .3329	.102 .0123	.012 5.4	2.781 .142			
6 469.0	18.9	72.19	5.25 3.924	.801 2.903	.477 .3392	.039 37.4	17.76 .630			
L = 2.66	HMIN = 455.	R = .2272	R/REQ = 13.7166	EOPA = 15.65						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	4	0.1973 .097				
30 98.314	1.51	2.390	0.653 .1121	.102 1.127	.235 2.733	1.00 3.6	0.862 .339			
6 817.3	41.7	13.40	2.73 .4333	.342 1.267	.171 1.764	.341 24.2	92.12 1.71			
L = 2.62	HMIN = 799.	R = .2315	R/REQ = 13.5595	EOPA = 15.76						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	0	0.30 0.30				
30 0.10	0.00	0.00	0.01 0.01	0.00 0.00	0.00 0.00	0.4	0.30 0.00			
6 6.30	0.60	0.00	0.00 0.01	0.03 2.177	1.26 .3623	.363 3.4	0.9035 .452			
L = 2.68	HMIN = 633.	R = .2474	R/REQ = 15.2765	EOPA = 16.82						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	2.6	0.00 0.33				
30 14.71	2.33	1.838	0.822 .2231	.131 0.00	0.00 0.00	0.00 3.0	0.5225 .091			
6 133.5	13.9	23.22	4.11 1.443	.64 .7257	.325 .3691	.069 20.4	5.002 .437			
L = 2.66	HMIN = 527.	R = .2553	R/REQ = 15.5205	EOPA = 14.73						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	0.359	0.021 3.0	1.389 .023			
30 13.13	1.65	5.882	2.08 .1321	.072 0.3392	.092 .0522	.288 6.8	1.928 .105			
6 89.12	7.58	5.048	1.26 .8151	.324 3.497	.480 34.63	1.09 44.4	21.31 .503			
L = 2.64	HMIN = 465.	R = .2610	R/REQ = 15.4561	EOPA = 14.74						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	4.4	0.145 -0.08				
30 8.53	0.10	1.430	2.42 .1321	.045 0.3527	.060 1.375	.099 14.6	1.330 .050			
6 77.41	5.17	10.46	1.33 1.427	.311 2.769	.304 15.13	.502 36.6	11.50 .313			
L = 2.66	HMIN = 344.	R = .2725	R/REQ = 15.5073	EOPA = 14.25						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	0.320	0.032 13.4	0.552 .043			
30 4.320	6.28	5.882	1.78 .0301	.041 0.4493	.061 3.579	.120 15.6	2.294 .373			
6 30.51	3.11	6.858	1.45 .5113	.20 3.512	.341 3.51	.763 90.6	21.61 .423			
L = 2.66	HMIN = 243.	R = .2812	R/REQ = 15.4803	EOPA = 14.03						
PA/EGY = 5.5-P.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.				
7 0.30 0.60	0.60 0.30	0.31 0.01	0.60 0.30	0.39 0.00	3.6	0.549 -0.53				
30 4.212	2.97	0.00	0.30 0.01	0.00 0.00	0.123 0.012	6.4	0.3182 .311			
6 30.436	2.45	0.40	0.04 0.01	0.07 0.00	+363 .036	40.6	24.59 .353			

SATELLITE S73-2. ENERGY SPECTRUM LISTING

L = 2.6E HMIN = 153. R = .2899 R/REQ = 17.5514 EOPA = 13.81
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
Z 1.10 C.00 0.00 0.30 C.71 0.31 0.00 C.00 0.00 0.30 5.6 0.00 6.00
90 0.70 C.00 .0919 .092 C.71 0.01 0.00 C.00 .1191 .045 7.8 .1948 .022
C .7030 .708 .3722 .372 C.71 0.01 .1451 .103 .3850 .177 40.0 .5558 .103

L = 2.6L HMIN = 25. R = .3027 R/REQ = 17.8848 EOPA = 13.68
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
Z 1.11 C.00 0.00 0.00 C.71 0.61 0.00 0.00 412-5 82-6 0.2 423-5 424-
90 .1674 .116 0.00 0.00 .0431 .031 .1910 .045 3.025 .131 14.4 1.439 .054
0 1.738 .764 0.00 0.00 .1512 .107 2.795 .317 23.60 .639 82-6 13.49 .354

-- SATELLITE-S72-2. ENERGY SPECTRUM TESTING --

L =	2.70	HMTN =	1319.	R =	.1972	A/BEQ =	11.9993	EPA =	15.85
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.31	0.00	0.00	0.00	1.0	3.00 0.00
90	54.41	6.33	4.412	1.30	.E12?	.303	.4412	.255	1.00 3.00 1.6 2.115 .227
-6	455.7	36.4	52.78	8.34	4.961	1.65	3.157	.914	.6597 .295 10.8 15.85 1.05
L =	2.74	HMTN =	1241.	R =	.1952	A/BEQ =	12.9585	EPA =	15.12
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
15	0.30	0.00	0.30	0.31	0.00	0.00	0.00	1.2	3.324 .332
90	23.53	4.16	7.753	.735	0.31	0.00	0.00	.6	2.146 .372
-6	454.5	2.1	7.257	7.26	0.31	0.00	.9576	.968	0.30 0.00 2.6 10.34 1.72
L =	2.74	HMTN =	1158.	R =	.2027	A/BEQ =	13.5407	EPA =	15.77
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.30	0.01	0.00	0.00	1.0	3.00 0.00
90	25.74	2.24	2.206	.911	.153?	.153	.2451	.110	.1833 .058 2.4 .6494 .103
-6	43.31	12.7	19.35	4.16	.7553	.533	3.447	.791	1.179 .327 16.2 5.214 .497
L =	2.78	HMTN =	1079.	R =	.2187	A/BEQ =	14.5735	EPA =	15.19
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.31	0.01	0.00	0.00	.6	9.30 0.00
90	24.51	3.47	2.941	1.34	0.31	0.00	0.00	2.0	1.128 .143
-6	329.7	26.1	18.98	4.60	.5141	.50	1.786	.632	.2233 .158 13.0 11.35 .009
L =	2.72	HMTN =	945.	R =	.2210	A/BEQ =	14.2683	EPA =	15.35
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.31	0.01	0.00	0.00	2.6	.0599 .033
90	25.74	3.18	1.103	.637	.1321	.102	.5147	.195	1.673 .157 3.2 2.371 .172
-6	478.8	14.4	11.03	2.53	1.231	.563	.5-685	.829	.412 .506 24.6 3.396 .542
L =	2.76	HMTN =	859.	R =	.2335	A/BEQ =	15.5663	EPA =	14.59
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
15	0.30	0.00	0.30	0.31	0.01	0.00	0.00	1.4	3.00 0.00
90	38.24	7.50	1.103	.637	0.31	0.01	0.00	1.2	.3402 .175
-6	220.6	35.8	11.61	5.81	2.31	1.43	.9376	.684	0.33 0.00 5.0 6.542 .965
L =	2.73	HMTN =	792.	R =	.2357	A/BEQ =	15.713	EPA =	14.73
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
15	0.30	0.00	0.30	0.31	0.01	0.00	0.00	3.6	4.751 .183
90	11.76	4.16	1.103	.637	.152?	.153	3.152	.482	35.99 1.15 1.8 22.35 .595
-6	84.57	14.3	4.436	2.42	.5492	.553	26.32	2.32	.3-2.9 5.44 11.6 195.4 .360
L =	2.72	HMTN =	622.	R =	.2554	A/BEQ =	16.3193	EPA =	14.24
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.31	0.01	0.00	0.00	4.4	3.00 0.00
90	10.32	1.51	1.029	.339	0.01	0.01	0.490	.049	.6065 .106 4.8 .7539 .073
-6	92.27	9.78	11.83	2.52	.4552	.323	1.398	.388	5.732 .544 27.2 6.663 .434
L =	2.77	HMTN =	555.	R =	.2582	A/BEQ =	17.5518	EPA =	13.81
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.31	0.01	0.00	0.00	2.4	9.30 0.00
90	3.030	0.857	.5515	.225	.0341	.034	.3476	.068	1.471 .099 9.8 1.139 .067
-6	52.14	5.29	4.988	1.37	.1141	.11	.3.126	.418	7.359 .454 53.0 6.433 .305
L =	2.75	HMTN =	448.	R =	.2573	A/BEQ =	17.4952	EPA =	13.57
PA/EGY =	5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.30	0.00	0.30	0.31	0.01	0.00	0.00	6.0	3.00 0.00
90	3.620	.640	.4932	.203	.0471	.033	.1951	.049	2.155 .120 11.6 1.274 .353
-6	84.53	3.46	3.732	.881	.2251	.154	1.4587	.257	9.742 .441 71.0 6.655 .271

SATEL.IFE S73-2. ENERGY SPECTRUM LISTING

L =	2.74	HMIN =	352.	I =	.2755	R/REQ =	18.2303	EOPA =	13.55
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.10 C.00	0.00 0.01	0.01 0.01	0.00 0.01	0.00 0.01	7.6	.3278 .312		
30	2.273 .551	.2252 .113	0.01 0.01	.2941 .063	1.954 .143	10.2	.9734 .353		
4	18.34 3.10	1.528 .624	.1351 .101	1.918 .315	15.37 .638	56.8	9.572 .363		

L =	2.74	HMIN =	264.	I =	.2839	R/REQ =	18.3615	EOPA =	13.31
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.10 C.00	0.00 0.01	0.01 0.01	0.00 0.00	0.00 0.01	10.4	.3147 .84		
30	1.231 .364	.1050 .074	[.01 0.01]	.1203 .040	.3553 .045	13.2	.2535 .32		
6	5.639 1.58	.9425 .421	.1511 .111	2.324 .278	3.939 .437	76.4	5.641 .246		

L =	2.75	HMIN =	152.	I =	.2937	R/REQ =	13.5841	EOPA =	13.03
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.10 C.00	0.00 0.00	0.01 0.01	0.00 0.00	0.00 0.01	5.8	.571-5.67		
30	2.111 .210	.2757 .139	0.01 0.01	0.00 0.00	0.00 0.01	7.6	.3256 .011		
0	5.048 1.78	.4262 .631	0.01 0.01	0.00 0.00	-0.15 0.00	45.4	.2630 .353		

L =	2.74	HMIN =	74.	I =	.3057	R/REQ =	20.2432	EOPA =	12.84
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.		
7	0.10 C.00	0.00 0.00	0.01 0.01	0.00 0.00	0.00 0.00	14.8	.300 0.03		
30	0.10 C.00	0.00 0.00	0.01 0.01	.1003 .026	.0545 .011	23.4	.0832 .011		
0	2.314 .204	0.00 0.00	0.02 0.02	1.230 .157	.3649 .093	143.8	.4064 .366		

--SATELLITE-S73-2-- ENERGY SPECTRUM LISTING

L =	2.80	HMIN =	1337.	R =	.1875	R/REQ =	13.3010	EOPA =	15.91				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	6.00	0.00	3.10	0.00	4.4	0.58	0.03
30	17.55	5.09	1.82	2.13	0.11	0.01	0.00	0.00	0.00	0.00	4.1	1.945	.433
0	416.1	63.5	70.70	13.7	0.01	0.00	0.00	0.00	0.00	0.00	3.0	13.36	1.33
L =	2.82	HMIN =	1339.	R =	.1970	R/REQ =	14.3757	EOPA =	15.29				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	6.90	0.40	3.35	0.26	4.2	0.185	.012
30	23.14	1.94	1.247	.344	1.021	.053	1.361	.057	313.5	.024	8.6	0.7736	.059
0	184.9	10.8	26.82	2.56	0.294	.344	1.388	.296	-4.2	0.06	45.8	6.566	.333
L =	2.82	HMIN =	1161.	R =	.2043	R/REQ =	14.7636	EOPA =	15.12				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	6.00	0.30	0.30	0.00	1.0	0.00	0.03
30	25.74	4.75	2.574	.973	[.01]	0.01	1.471	.104	0.00	0.00	1.8	0.9510	.143
0	226.0	21.6	10.35	3.35	0.00	0.00	7257	.419	-1210	.121	12.8	7.319	.663
L =	2.82	HMIN =	1042.	R =	.2172	R/REQ =	15.7238	EOPA =	14.15				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	6.490	0.49	0.00	0.00	2.8	0.278	.023
30	7.353	1.90	0.7353	.520	[.01]	0.00	2.206	.127	0.00	0.00	2.0	0.3890	.087
0	119.0	18.6	6.708	3.56	0.01	0.00	2303	.290	-1613	.161	19.0	0.763	.533
L =	2.82	HMIN =	933.	R =	.2274	R/REQ =	17.3635	EOPA =	13.89				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	6.30	0.30	0.30	0.00	1.4	0.30	0.03
30	15.39	2.77	1.838	.822	[.01]	0.00	0.00	0.00	0.00	0.00	2.8	0.5558	.083
0	93.15	12.4	10.25	2.96	0.183	.314	0.7539	.342	-1524	.108	18.4	7.297	.371
L =	2.82	HMIN =	933.	R =	.2353	R/REQ =	17.5158	EOPA =	13.82				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	0.00	0.00	0.00	0.00	3.6	0.00	0.03
30	9.304	1.27	0.7353	.278	[.01]	0.01	2.16	.225	11.31	.372	7.6	0.667	.170
0	82.7	7.38	6.076	1.43	0.372	.307	15.44	1.01	47.95	-1.72	43.6	32.63	.963
L =	2.82	HMIN =	742.	R =	.2443	R/REQ =	14.7585	EOPA =	13.35				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	6.00	0.30	0.30	0.00	2.2	0.30	0.03
30	12.13	2.11	1.176	.416	[.01]	0.01	1.029	.275	0.019	.041	3.8	0.5143	.079
0	31.32	10.5	8.204	2.28	0.2743	.275	0.577	1.06	3.531	-767	22.4	9.531	.572
L =	2.82	HMIN =	633.	R =	.2550	R/REQ =	19.4302	EOPA =	13.11				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	2.941	.208	0.245	0.025	1.0	0.0640	.037
30	2.91	1.04	0.245	.245	0.1721	.102	0.5515	.142	0.041	0.025	3.8	0.2867	.054
0	27.30	6.48	3.629	1.62	0.231	.283	3.786	.691	36.50	1.52	21.2	22.97	.912
L =	2.84	HMIN =	555.	R =	.2614	R/REQ =	19.2785	EOPA =	13.15				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	0.420	.030	0.1716	.046	5.8	0.1073	.027
30	3.125	0.758	.4412	.180	[.01]	0.05	1.408	.172	20.40	.433	9.2	0.1097	.223
0	31.27	4.17	2.739	.856	0.3493	.201	15.41	.927	152.1	2.15	52.2	0.98	1.14
L =	2.85	HMIN =	442.	R =	.2719	R/REQ =	23.1805	EOPA =	12.85				
PA/ESY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	0.60	0.00	0.30	0.91	0.01	0.00	0.00	0.00	0.00	11.0	0.00	0.03
30	2.521	.515	0.1838	.092	[.01]	0.01	0.0579	.028	0.1593	.031	14.0	0.1667	.022
0	24.54	2.91	2.448	.654	0.1427	.101	0.7603	.162	17.28	.540	94.4	10.31	.305

SATELLITE S73-2. ENERGY SPECTRUM TESTING

L = 2.85 HMIN = 339. R = -2813 R/REQ = 20.9890 EQPA = 12.61
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-5L. 50.-10J. T 5.5-100.
 7 0.10 C.00 0.00 0.00 0.01 0.01 .2574 .056 1.425 -.111 10.8 -73.9 -.051
 30 4.517 .669 .0613 .L51 .0515 .043 2.547 .180 23.79 .376 12.0 13.07 .205
 0 41.29 4.11 .8663 .403 .5914 .241 20.36 .894 200.8 2.00 -72.2 114.1 1.11

 L = 2.83 HMIN = 263. R = -2873 R/REQ = 21.0760 EQPA = 12.58
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 0.10 C.00 0.00 0.00 0.01 0.01 .2294 .029 .3368 .021 5.8 -4268 .011
 30 2.353 .832 0.00 0.00 0.01 0.01 .3529 .102 5.949 .292 5.2 4.392 .181
 0 10.38 2.94 0.00 0.04 0.31 0.01 -3.557 .529 +7.24 1.31 38.0 27.57 .745

 L = 2.88 HMIN = 152. R = -3012 R/REQ = 23.1191 EQPA = 12.03
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 0.10 C.00 0.00 0.00 0.01 0.01 1.00 0.00 0.00 0.00 3.0 0.00 0.00
 30 0.10 C.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 4.8 311.5 81.4
 0 1.037 1.14 0.00 0.00 0.01 0.01 0.00 0.00 0.00 2150 .138 28.0 .1371 .061

 L = 2.85 HMIN = 25. R = -3142 R/REQ = 23.2708 EQPA = 11.95
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 0.10 C.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.00 3.0 0.00 0.00
 30 0.10 C.00 0.00 0.00 0.01 0.01 .0210 .012 .1930 .024 23.6 .1038 .013
 0 0.10 C.00 0.00 0.04 0.01 0.01 .3706 .087 2.487 -.159 141.2 1.430 .083

- SATELLITE S73-2. ENERGY SPECTRUM LISTING -													
L =	2.96	HMIN =	1221.	R =	.2020	B/REQ =	15.9222	EOPA =	-14.07				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	6.66	6.00	0.00	0.00	0.00	0.00	0.00	.6	0.00	0.00		
30	11.76	2.40	1.176	.415	0.01	0.01	1.471	.085	.0245	.025	3.6	.3890	.065
-6	112.2	12.2	5.938	1.98	0.01	0.01	2.019	.505	.2524	.126	22.4	.3908	.365
L =	2.92	HMIN =	1169.	R =	.2051	B/REQ =	16.5405	EOPA =	-14.23				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.00	6.66	6.00	0.00	0.01	0.00	0.00	0.00	1.0	0.00	0.03		
30	8.03	2.44	7.353	.368	0.01	0.01	1.471	.104	.1735	.074	2.2	.3183	.075
-6	106.4	16.6	5.582	2.50	.455?	.455	2.233	.706	.5582	.250	12.8	.3900	.454
L =	2.90	HMIN =	1087.	R =	.2156	B/REQ =	14.5047	EOPA =	-13.44				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.00	6.66	6.00	0.00	0.01	0.00	0.00	0.00	1.2	0.00	0.03		
30	5.332	1.63	4.902	.347	0.01	0.01	0.082	.051	.0147	.015	4.4	.1503	.035
-6	55.54	8.20	3.024	1.35	.2+13	.2+13	.7573	.309	.0631	.063	23.8	.1.934	.243
L =	2.97	HMIN =	947.	R =	.2285	B/REQ =	19.3259	EOPA =	-13.15				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	6.66	6.00	0.00	0.01	0.00	0.00	0.00	5.0	0.00	0.02		
30	7.159	1.15	9.454	.315	0.01	0.01	0.2574	.056	.2.851	.153	9.0	1.807	.083
-6	56.59	6.16	6.141	1.31	.2325	.16+	2.947	.399	.17.19	.699	51.6	11.85	.422
L =	2.95	HMIN =	893.	R =	.2336	B/REQ =	19.3716	EOPA =	-13.13				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.00	6.66	6.00	0.00	0.01	0.00	0.00	0.00	1.6	.1702	.054		
30	5.17	1.38	7.353	.520	0.01	0.01	0.4412	.180	.7.059	.500	2.8	2.973	.203
-6	50.30	9.60	1.814	1.28	0.01	0.00	1.378	.566	.32.17	.1.61	16.8	29.11	.959
L =	2.95	HMIN =	751.	R =	.2469	B/REQ =	20.3083	EOPA =	-12.82				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.00	6.66	6.00	0.00	0.01	0.00	0.00	0.00	1.0	.0389	.033		
30	5.812	1.32	9.804	.490	0.01	0.01	4.301	.398	33.50	.906	3.6	16.30	.423
-6	53.22	8.62	4.233	1.60	0.01	0.00	29.54	1.86	14.84	.3.90	24.2	145.1	.215
L =	2.96	HMIN =	642.	R =	.2578	B/REQ =	21.5092	EOPA =	-12.45				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	6.66	6.00	0.00	0.01	0.00	0.00	0.00	1.0	.0432	.031		
30	2.91	8.49	2.451	.245	0.01	0.01	0.2941	.085	3.425	.352	5.2	4.474	.193
-6	20.16	4.63	8.234	.596	0.01	0.00	1.757	.366	58.57	.1.52	36.6	32.30	.924
L =	2.94	HMIN =	538.	R =	.2673	B/REQ =	21.9414	EOPA =	-12.33				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.00	6.66	6.00	0.00	0.01	0.00	0.00	0.00	4.8	.0162	.011		
30	1.471	.725	0.00	0.00	0.01	0.01	0.1471	.056	.7.353	.278	5.2	5.327	.203
-6	5.816	2.19	8.538	.604	0.01	0.01	2.903	.477	52.65	.1.40	36.6	31.17	.915
L =	2.96	HMIN =	430.	R =	.2795	B/REQ =	23.2363	EOPA =	-11.97				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.00	6.66	6.00	0.00	0.01	0.00	0.00	0.00	2.0	0.00	0.03		
30	0.00	0.00	0.00	0.00	0.01	0.01	0.4412	.147	1.887	.215	2.8	1.195	.123
-6	5.123	2.96	8.538	.654	0.01	0.01	2.444	.611	10.31	.888	18.0	6.656	.533
L =	2.94	HMIN =	350.	R =	.2854	B/REQ =	23.3554	EOPA =	-11.94				
PA/EGY =	5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.						
7	6.30	6.66	6.00	0.00	0.01	0.00	0.00	0.00	4.8	.3162	.011		
30	7.353	.520	0.00	0.00	0.01	0.01	0.2205	.074	.5637	.033	4.6	.4821	.064
-6	2.721	1.57	4.536	.454	0.01	0.01	2.419	.484	5.929	.570	31.4	4.353	.325

(- SATELLITE S72-2. ENERGY SPECTRUM LISTING -

(L = 2.96 HMJN = 232. R = .2975 R/REQ = 24.9972 EOPA = 11.55
PA/ESY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 0.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.4 0.00 0.00
90 0.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 2.8 0.00 0.00
6 6.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1935 .137 15.2 .1010 .071

(L = 2.97 HMJN = 141. R = .3071 R/REQ = 25.9885 EOPA = 11.31
PA/ESY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 0.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 2.4 0.00 0.00
30 0.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 3.6 .0216 .015
0 1.252 1.26 0.00 0.00 0.00 0.00 1.210 .121 .5048 .178 23.2 .3310 .105

(L = 2.94 HMJN = 39. R = .3192 R/REQ = 26.0414 EOPA = 11.30
PA/ESY= 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
7 0.30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 17.6 .3257 .051
90 .2451 .142 0.00 0.00 0.00 0.00 0.00 .3333 .057 5.029 .157 17.4 3.383 .087
0 2.053 .776 0.00 0.00 0.00 0.00 2.761 .280 33.64 .695 100.0 13.78 .381

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SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.28	HMIN = 1151.	R = .1523	B/BEQ = 1.0149	EQPA = 83.03
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 2.618 .467 .7706 .245 12.75 .423 13.17 .304 12.04 .178 .23.0 12.55 .146				T 5.5-100.
90 272.5 3.34 46.97 1.01 51.60 .637 29.95 .340 18.57 .195 36.6 34.27 .191				
0 2534 19.3 470.3 5.71 453.7 3.59 239.9 1.76 83.29 .748 213.4 261.3 .970				
L = 1.25	HMIN = 947.	R = .1637	B/BEQ = 1.0304	EQPA = 80.11
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.786 .433 .6684 .211 1.343 .178 .021 .201 4.620 .168 12.2 3.493 .104				T 5.5-100.
90 61.51 1.98 17.57 .947 29.56 .642 23.94 .430 14.72 .252 19.8 19.67 .197				
0 531.0 11.3 157.3 4.42 337.4 4.12 271.3 2.59 145.9 1.36 117.5 212.9 1.16				
L = 1.25	HMIN = 848.	R = .1712	B/BEQ = 1.0571	EQPA = 76.56
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.070 .378 .2451 .123 .4814 .145 1.471 .164 3.393 .167 9.4 2.148 .094				T 5.5-100.
90 27.45 1.64 13.07 .731 19.72 .615 18.32 .350 12.77 .222 18.0 16.58 .139				
0 213.9 8.16 115.8 4.02 235.9 3.74 217.6 2.46 118.0 1.27 103.8 164.1 1.10				
L = 1.24	HMIN = 750.	R = .1786	B/BEQ = 1.0895	EQPA = 73.34
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .4272 .297 .1950 .074 1.748 .169 1.071 .106 8.2 1.734 .070				T 5.5-100.
90 8.203 .934 6.618 .699 15.40 .655 14.44 .461 10.70 .267 11.2 11.48 .200				
0 74.71 5.36 4.05 3.07 114.9 3.74 123.5 2.25 129.4 1.65 72.5 116.4 1.11				
L = 1.24	HMIN = 651.	R = .1861	B/BEQ = 1.1380	EQPA = 69.62
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .5882 .616 .2131 .149 .2188 .098 .1951 .069 1.074 .126 6.0 5.946 .067				T 5.5-100.
90 6.863 1.06 3.840 .560 7.743 .464 8.891 .317 7.713 .238 10.4 8.237 .176				
0 35.32 4.13 27.31 2.59 73.62 2.84 100.9 2.23 74.44 1.35 59.2 73.18 1.01				
L = 1.24	HMIN = 550.	R = .1935	B/BEQ = 1.1861	EQPA = 66.65
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .2206 .057 4.9 .1216 .071				T 5.5-100.
90 1.471 .556 1.563 .379 3.064 .343 4.461 .331 4.812 .198 7.6 4.479 .151				
0 16.33 3.14 14.21 2.07 27.07 1.86 50.55 1.79 51.07 1.24 47.4 44.94 .853				
L = 1.24	HMIN = 446.	R = .2010	B/BEQ = 1.2262	EQPA = 64.57
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0499 .049 .0598 .029 2.4 .0572 .026				T 5.5-100.
90 .9804 .490 .8170 .259 .7275 .167 1.235 .191 2.397 .138 6.6 1.403 .091				
0 9.123 2.75 6.451 1.61 7.948 1.17 14.17 1.10 18.57 .889 34.8 14.85 .572				
L = 1.24	HMIN = 353.	R = .2081	B/BEQ = 1.2603	EQPA = 62.97
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .26				T 5.5-100.
90 .2941 .294 .1838 .184 .4902 .110 .7904 .121 4.4 .5747 .071				
0 1.161 1.16 2.419 1.21 1.210 .541 5.225 .779 7.996 .577 24.8 5.914 .428				
L = 1.24	HMIN = 248.	R = .2159	B/BEQ = 1.3012	EQPA = 61.24
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.6				T 5.5-100.
90 .0735 .052 .0735 .052 2.6 .0590 .030				
0 .2889 .288 .6911 .309 1.056 .264 21.2 .7969 .170				
L = 1.24	HMIN = 149.	R = .2238	B/BEQ = 1.3713	EQPA = 58.52
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 2.0				T 5.5-100.
90 4.2				
0 2.765 1.95 .1319 .132 21.2 .1087 .063				

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.39	HMIN = 2038.	B = .1157	B/BEQ = .9992	EQPA = 90.00
PA/EGY= 5.5-8.	8.-17. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 209.1 5.55 77.06 3.37 98.04 1.83 56.26 1.29 23.16 .757	6.4 46.71 .533			
90 1755 16.9 170.4 3.23 99.72 1.38 39.38 .602 32.89 .431 13.2 84.96 .500	101.1 1.38 76.8 463.6 2.15			
0 14714 72.7 713.1 11.5				
L = 1.36	HMIN = 1732.	B = .1281	B/BEQ = 1.0316	EQPA = 79.92
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 73.11 1.11 26.02 .474 55.36 .427 47.37 .277 23.94 .135 31.0 36.63 .125				
90 1327 3.62 114.6 .726 82.44 .402 56.71 .186 29.96 .123 152.4 76.18 .139				
0 12221 20.7 990.5 4.03 393.7 1.63	37.38 .246 893.6 443.9 .518			
L = 1.34	HMIN = 1304.	B = .1481	B/BEQ = 1.1407	EQPA = 69.44
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 11.49 .572 5.310 .733 21.49 .311 25.49 .231 17.18 .138 67.6 19.18 .105				
90 673.4 7.09 69.54 .692 59.64 .419 30.34 .209 23.23 .125 105.4 49.78 .135				
0 5730 16.2 693.2 3.39 510.1 2.21 105.8 .698 55.98 .358 631.8 310.3 .614				
L = 1.34	HMIN = 954.	B = .1660	B/BEQ = 1.2901	EQPA = 61.59
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 2.941 .766 .8089 .244 7.606 .292 14.55 .422 5.687 .372 9.8 8.772 .186				
90 238.0 4.29 26.13 1.33 41.19 1.07 25.33 .643 16.57 .319 13.2 23.13 .268				
0 2244 26.5 226.2 7.69 400.5 5.57 106.8 1.93 105.2 1.33 91.4 211.7 1.41				
L = 1.34	HMIN = 849.	B = .1745	B/BEQ = 1.3713	EQPA = 58.54
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 .9804 .400 .2828 .126 3.574 .427 3.941 .340 3.405 .187 8.2 2.994 .119				
90 102.1 4.63 29.41 1.40 38.19 1.14 20.98 .507 13.26 .274 10.4 22.43 .292				
0 839.0 20.8 259.1 7.79 377.7 5.12 262.1 3.56 175.4 1.94 50.8 224.5 1.58				
L = 1.34	HMIN = 743.	B = .1820	B/BEQ = 1.4081	EQPA = 57.43
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 .2941 .234 .1838 .154 .3837 .171 1.762 .132 3.395 .144 6.3 3.581 .143				
90 52.26 2.43 16.74 1.04 23.28 .771 17.21 .562 11.27 .455 9.6 12.83 .228				
0 596.4 17.7 174.4 6.78 475.5 7.10 193.1 7.16 83.35 1.47 5F.8 131.9 1.58				
L = 1.34	HMIN = 648.	B = .1902	B/BEQ = 1.4781	EQPA = 55.34
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 .3258 .271 .1050 .105 .2042 .083 .4596 .092 2.068 .255 7.2 .9159 .066				
90 27.21 3.15 12.35 1.35 19.57 1.07 15.00 .525 8.824 .268 6.2 14.79 .305				
0 97.13 7.83 53.00 4.41 150.1 4.59 160.4 3.30 83.46 1.62 46.6 11.7 1.40				
L = 1.34	HMIN = 549.	B = .1974	B/BEQ = 1.5034	EQPA = 54.64
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 .0513 .061 .0832 .051 .8088 .086 4.4 .9135 .085				
90 3.824 .750 3.476 .482 5.617 .437 8.500 .500 7.402 .426 7.6 4.769 .148				
0 48.64 6.18 42.33 4.13 63.16 3.26 62.17 2.24 79.79 1.22 36.9 43.73 1.02				
L = 1.34	HMIN = 443.	B = .2060	B/BEQ = 1.5666	EQPA = 52.55
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 .2575 .260 .2574 .097 .1029 .039 5.8 .0915 .323				
90 1.471 1.47 1.471 .600 2.880 .420 3.950 .288 3.654 .164 5.2 5.529 .203				
0 1.935 1.12 7.587 1.58 24.04 1.98 50.51 1.91 51.04 1.39 41.8 41.85 .877				
L = 1.35	HMIN = 346.	B = .2143	B/BEQ = 1.6766	EQPA = 50.56
PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
7 .4011 .232 .4412 .180 .1021 .072 .9550 .153 1.158 .146 7.4 .5941 .056				
90 4.725 1.79 4.243 1.23 3.849 .727 4.354 .536 8.721 .518 43.4 6.565 .341				

SATELLITE S77-7. ENERGY SPECTRUM LISTING												
(	L = 1.45	HMIN = 2339.	B = .1065	P/REO = 1.0355	EQPA = 79.37							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 235.5 1.53 67.37 511 90.97 407 52.27 224 22.76 103 157.2 46.75 128											
(	90 1089 3.30 204.5 756 107.4 753 35.60 143 37.17 005 264.6 174.8 124											
	0 17871 18.4 1621 3.66 137.6 725											
(	L = 1.44	HMIN = 1774.	B = .1301	P/REO = 1.2363	EQPA = 54.07							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 57.50 1.08 27.01 514 52.32 525 37.44 314 18.60 154 61.6 27.61 172											
(	90 1170 4.26 114.5 946 73.55 470 70.19 207 25.02 137 98.6 66.85 162											
	0 10237 22.4 915.4 4.71 268.6 1.64											
(	L = 1.44	HMIN = 1285.	B = .1549	P/REO = 1.4782	EQPA = 55.34							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 4.08 1.478 2.075 259 12.92 357 17.55 316 10.54 157 28.0 12.77 170											
(	90 389.6 7.20 59.40 925 53.43 546 25.98 259 15.93 138 56.0 35.35 158											
	0 3639 18.3 604.9 5.31 486.3 3.08 133.8 1.12 70.35 575 310.8 263.7 507											
(	L = 1.44	HMIN = 945.	B = .1719	P/REO = 1.6473	EQPA = 51.18							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 9.358 1.54 2.674 1.34 2.451 4.33 5.897 2.94 5.632 2.04 9.2 5.117 1.17											
(	90 111.6 3.20 34.60 1.16 76.17 754 20.92 383 12.42 2.32 18.4 21.59 214											
	0 903.6 15.4 28.4 6.06 776.5 4.51 208.9 2.78 96.55 1.13 110.0 197.3 1.15											
(	L = 1.45	HMIN = 853.	B = .1799	P/REO = 1.7565	EQPA = 43.98							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 4.535 1.32 3.151 1.52 1.566 2.31 1.975 2.05 3.897 2.39 7.4 2.156 1.07											
(	90 56.93 2.45 23.58 1.11 27.44 775 19.72 472 10.47 253 13.4 15.54 219											
	0 57.0 14.5 201.5 6.05 272.4 4.48 215.3 2.74 87.27 1.22 81.0 152.9 1.24											
(	L = 1.46	HMIN = 753.	B = .1886	P/REO = 1.8645	EQPA = 47.04							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 4.902 1.490 1.23 6723 1.19 2.572 1.81 4.7 2.967 1.20											
(	90 27.76 2.26 11.27 960 23.37 891 14.47 377 8.170 1.88 11.6 14.55 221											
	0 179.6 8.93 104.7 4.34 185.2 4.15 186.6 2.72 78.33 1.25 68.2 129.8 1.21											
(	L = 1.45	HMIN = 649.	B = .1970	P/REO = 1.9715	EQPA = 46.02							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 4.902 1.490 1.061 1.061 1.1103 1.064 1.070 1.097 5.6 8.059 1.075											
(	90 10.05 1.34 10.43 875 10.85 689 12.61 681 7.000 3.21 7.2 5.970 1.94											
	0 113.8 9.05 64.60 4.29 59.79 2.91 99.56 2.46 59.03 1.44 49.6 76.41 1.09											
(	L = 1.44	HMIN = 547.	B = .2044	P/REO = 1.9505	EQPA = 45.73							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 7.755 1.250 1.0766 1.077 1.2574 1.069 5.4 1.225 1.030											
(	90 6.250 1.52 5.719 5.84 6.242 4.89 8.366 3.70 5.858 1.268 7.2 5.700 1.90											
	0 64.43 6.75 41.42 3.83 53.28 3.06 82.77 2.48 50.72 1.56 39.6 63.12 1.11											
(	L = 1.45	HMIN = 455.	B = .2170	P/REO = 2.1100	EQPA = 47.51							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 4.902 1.490 1.0184 1.018 7.4 0.0229 0.016											
(	90 2.206 1.735 2.574 973 3.860 4.86 5.074 4.32 3.456 3.356 7.8 3.134 1.81											
	0 9.675 3.23 20.43 3.31 26.17 2.38 34.43 1.86 76.77 1.33 28.2 34.64 3.71											
(	L = 1.47	HMIN = 356.	B = .2218	P/REO = 2.2377	EQPA = 42.00							
	PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.					
	7 2.2											
(	90 1.961 1.490 2.292 1.33 1.4902 1.155 3.676 1.520 3.2 1.9605 1.108											
	0 15.21 4.55 11.78 2.90 9.123 1.12 11.00 1.917 16.5 11.76 1.715											

SATELLITE 573-3. ENERGY SPECTRUM LISTING

L =	1.44	HMIN =	249.	B =	.2291	B/BED =	2.2000	EQPA =	42.39
PA/EGY =	5.5-8.	E =	-13.	I =	-25.	25.-50.	50.-100.	T	5.5-100.
99									2.4
0									.1618 .040 2.2 .1945 .055
									2.305 .644 14.0 1.536 .290
L =	1.47	HMIN =	143.	B =	.2364	B/BED =	2.2138	EQPA =	42.73
PA/EGY =	5.5-P.	E =	-13.	I =	-25.	25.-50.	50.-100.	T	5.5-100.
99									3.0
90									3.4
0									.1210 .121 24.0 .0320 .032
L =	1.45	HMIN =	7.	B =	.2781	B/BED =	2.7097	EQPA =	37.41
PA/EGY =	5.5-P.	E =	-13.	I =	-25.	25.-50.	50.-100.	T	5.5-100.
99									17.0
90									24.6
0									994-5 39-4 144.0 573-5 53-4

(SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.57	HMIN = 7152.	R = .0821	B/REQ = 1.0220	EQPA = 81.57
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 328.0 3.77 50.06 1.12 75.69 .265 38.10 .400 16.15 .197 33.4 33.93 .215				
90 2666 9.55 447.6 2.54 181.7 1.14 30.99 .311 27.92 .195 47.6 134.7 .332				
0 20566 45.9 3504 13.4 895.7 4.34			117.5 .776 283.6 905.7 1.57	
L = 1.57 HMIN = 2638. R = .0981 B/REQ = 1.1301 EQPA = 70.17				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 218.9 1.41 45.57 .469 57.44 .374 39.81 .116 16.98 .037 159.2 36.53 .095				
90 1955 3.42 275.5 .909 122.7 .392 20.08 .134 31.18 .039 241.2 106.9 .171				
0 17047 18.3 2202 4.76 495.5 1.46			102.4 .3251410.6 682.2 .509	
L = 1.54 HMIN = 1767. R = .1358 B/REQ = 1.5927 EQPA = 52.42				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 869 .638 5.214 .41 15.21 .388 18.71 .297 10.92 .169 31.2 12.72 .126				
90 593.0 4.61 106.5 1.25 67.49 .683 21.57 .275 15.53 .163 43.4 42.53 .195				
0 5262 24.9 973.0 7.59 520.3 3.58 56.16 .812 37.23 .469 246.0 231.7 .953				
L = 1.54 HMIN = 1268. R = .1615 B/REQ = 1.8861 EQPA = 46.73				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.07 .322 .4136 .138 3.984 .295 7.005 .216 4.771 .140 17.5 5.356 .109				
90 152.3 2.66 50.45 1.09 39.05 .602 19.96 .298 11.22 .166 31.8 22.42 .167				
0 1461 15.1 450.9 5.96 355.9 3.39 150.0 1.53 78.25 .777 187.2 189.2 .961				
L = 1.55 HMIN = 946. R = .1776 B/REQ = 2.1272 EQPA = 43.29				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .4902 .490 .3511 .124 .582 .120 2.492 .143 6.0 2.192 .119				
90 42.73 2.39 34.72 1.68 25.15 .801 16.18 .514 8.971 217 11.0 15.66 .235				
0 460.2 14.7 278.6 7.56 748.4 4.06 189.2 2.86 75.23 1.20 63.0 149.3 1.35				
L = 1.54 HMIN = 847. R = .1859 B/REQ = 2.1923 EQPA = 42.48				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .3254 .231 .0735 .774 3.064 .116 1.961 .069 1.071 106 7.3 5.985 .055				
90 42.89 2.22 18.58 1.11 18.94 .726 12.24 .474 7.711 .266 10.0 10.94 .206				
0 351.8 17.3 163.0 5.96 128.1 1.51 143.6 2.51 80.38 1.72 66.4 114.9 1.15				
L = 1.54 HMIN = 744. R = .1934 B/REQ = 2.2587 EQPA = 41.71				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .7353 .735 .1471 .147 .2298 .094 .2647 .088 .5441 .089 5.0 4.292 .057				
90 24.06 1.70 11.43 .804 13.42 .611 3.779 .424 6.397 .259 10.0 7.800 .174				
0 108.0 10.1 113.5 5.64 133.0 3.80 85.53 2.19 60.06 1.28 54.4 51.58 1.07				
L = 1.54 HMIN = 647. R = .2018 B/REQ = 2.3345 EQPA = 40.36				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0571 .051 .2206 .048 6.2 1.388 .029				
90 5.042 1.03 14.23 1.22 8.617 .574 7.614 .353 4.989 .168 8.8 7.562 .184				
0 65.80 5.64 50.22 3.40 59.81 2.38 81.73 1.93 63.15 1.20 63.0 67.94 .910				
L = 1.55 HMIN = 558. R = .2101 B/REQ = 2.5068 EQPA = 39.17				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0490 .049 .0735 .0735 .052 3.0 1.1399 .322				
90 12.62 1.24 6.595 .607 3.830 .289 5.068 .239 4.108 .194 12.0 4.176 .116				
0 136.4 8.64 100.9 5.25 51.23 2.70 45.45 1.63 30.62 .934 51.6 44.75 .916				
L = 1.55 HMIN = 452. R = .2185 B/REQ = 2.5818 EQPA = 38.49				
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .2941 .294 .0358 .037 .0368 .037 3.8 1.1307 .018				
90 1.654 .551 2.083 .505 1.654 .318 2.265 .258 2.463 .150 6.4 2.419 .121				
0 7.425 2.24 13.95 2.14 10.51 1.23 18.09 1.16 26 81 .939 41.4 20.20 .612				

SATELLITE 573-3. ENERGY SPECTRUM LISTING

L = 1.56 HMIN = 356. B = .2274 B/BEO = 2.7502 EOPA = 37.19
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 1.4
 90 1.961 .693 1.183 .368 1.313 .740 .6618 .110 1.229 .114 6.8 1.144 .041
 11 13.11 2.4 11.09 1.49 10.49 .091 8.240 .621 24.6 11.58 .601
 L = 1.55 HMIN = 249. B = .2357 B/BEO = 2.7005 EOPA = 36.77
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 4.0
 90 .5882 .416 .1838 .184 .3064 .177 .1103 .064 .5882 .218 3.4 .1965 .047
 11 2.322 1.64 2.419 1.21 .9304 .465 1.451 .407 2.065 .340 25.4 1.814 .234
 L = 1.55 HMIN = 148. B = .2437 B/BEO = 2.8796 EOPA = 36.11
 PA/EGY = 5.5-6. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 1.8
 90 .0368 .037 7.4 .0114 .011
 11 1.578 1.53 .1613 .161 .0506 .031 18.2 .1256 .073
 L = 1.55 HMIN = 5. B = .2945 B/BEO = 3.5070 EOPA = 32.78
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 17.8
 90 .0101 .010 145.2 529-5 53-4
 0

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.70	HMIN = 4001.	B = .0634	B/BEQ = .9951	EQPA = 90.00
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7				T 5.5-100.
90			20.29 1.77 10.59 .882	.4 27.43 1.63
0				0.0
				.4
L = 1.65	HMIN = 7478.	B = .0758	B/BEQ = 1.0074	EQPA = 73.53
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 26F.1 2.27 47.97 .466 52.40 .425 25.78 .212 11.56 .196 81.4 28.96 .118				
90 2581 5.21 546.2 1.74 212.0 .712 26.20 .175 21.18 .107 172.4 145.3 .207				
0 21719 28.8 4365 3.86 1330 7.15			89.83 .401 809.4	1019 .383
L = 1.64	HMIN = 2600.	B = .1032	B/BEQ = 1.4563	EQPA = 55.96
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 50.58 .958 17.51 .996 44.13 .399 20.43 .203 9.701 .091 70.8 17.77 .193				
90 1213 3.87 273.3 1.22 106.2 .502 18.73 .144 18.65 .106 127.2 73.80 .150				
0 17975 20.6 2265 5.64 438.9 1.98			82.26 .399 749.7	510.8 .724
L = 1.65	HMIN = 1755.	B = .1412	B/BEQ = 2.0257	EQPA = 44.64
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 2.773 .475 1.341 .241 5.379 .703 6.870 .236 4.582 .145 17.4 4.350 .105				
90 767.0 4.58 174.5 1.63 46.80 .729 13.72 .247 9.186 153 2F.6 28.60 .197				
0 7910 22.6 952.6 9.10 435.0 4.01 93.78 1.24 41.14 .609 164.4 230.1 1.04				
L = 1.64	HMIN = 1233.	B = .1674	B/BEQ = 2.3537	EQPA = 40.53
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 .4576 .250 .2674 .174 9191 .217 1.569 .195 9.069 .105 7.4 .3517 .067				
90 116.3 3.74 52.79 1.97 24.70 .630 11.79 .340 6.838 .190 12.4 15.87 .223				
0 708.9 17.3 31.0 7.90 231.1 4.23 127.4 2.16 74.82 1.18 77.8 141.4 1.18				
L = 1.65	HMIN = 955.	B = .1819	B/BEQ = 2.6374	EQPA = 38.04
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 .1021 .102 .8824 .180 .4412 .104 7.4 .6970 .106				
90 60.61 4.13 34.49 1.68 15.98 .836 5.284 .451 6.434 .486 6.0 10.27 .258				
0 827.8 29.8 774.9 13.7 160.3 5.68 63.76 2.53 33.43 1.75 29.2 36.39 1.59				
L = 1.64	HMIN = 843.	B = .1907	B/BEQ = 2.6714	EQPA = 37.72
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 .4814 .145 .3576 .115 .4902 .114 5.0 .3190 .050				
90 43.01 3.98 24.12 1.98 17.06 .707 9.150 .387 4.220 22A 6.4 9.282 .238				
0 223.1 13.1 175.7 8.08 127.7 4.29 89.70 2.52 51.84 1.34 40.4 83.96 1.26				
L = 1.65	HMIN = 745.	B = .1997	B/BEQ = 2.8493	EQPA = 36.33
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 .0882 .051 .5310 .066 7.4 .3575 .043				
90 39.50 2.27 19.56 .979 7.910 .469 5.853 .293 3.467 .140 12.0 6.426 .164				
0 304.8 11.4 160.1 6.03 80.44 2.78 57.42 1.61 29.16 .795 65.2 57.36 .822				
L = 1.66	HMIN = 650.	B = .2082	B/BEQ = 3.0362	EQPA = 35.02
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 .1671 .067 .2206 .052 4.0 .2334 .046				
90 14.29 1.73 14.56 1.46 5.515 .460 3.550 .273 1.887 .152 6.6 3.737 .148				
0 174.9 10.3 95.79 6.30 50.71 2.50 35.50 1.63 17.08 .797 37.8 33.85 .829				
L = 1.64	HMIN = 546.	B = .2149	B/BEQ = 3.0327	EQPA = 35.05
PA/EGY= 5.5-8.	8.-17.	13.-25.	25.-50.	50.-100.
7 .0548 .042 .1471 .047 5.4 .1889 .027				
90 17.16 2.05 10.71 1.06 7.370 .359 2.770 .261 1.838 .150 6.6 3.083 .135				
0 96.72 8.51 56.20 4.84 24.47 1.36 21.81 1.24 14.39 .717 41.0 22.93 .655				

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.65 HMIN = 448. R = .2236 B/REQ = 3.2074 EQPA = 33.34
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.

90 9.706 1.69 4.517 .685 1.674 .749 1.474 .133 1.149 .103 7.6 1.792 .096
0 39.70 4.34 29.69 3.13 14.29 1.40 17.54 1.04 13.50 .657 45.8 16.26 .522

L = 1.65 HMIN = 347. R = .2371 P/REQ = 3.3624 EQPA = 33.05
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.

90 .2042 .144 .0368 .037 2.2 .0531 .031
91 1.654 .551 .5515 .184 .3676 .164 .6250 .107 3.8 .5836 .077
0 19.35 4.13 9.975 2.17 3.064 .497 4.676 .432 33.8 4.476 .319

L = 1.64 HMIN = 251. R = .2402 B/REQ = 3.4084 EQPA = 32.90
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.

90 .9191 .411 .1821 .102 .2574 .097 .2101 .047 4.0 .3210 .056
0 4.147 1.47 .4652 .329 1.693 .453 1.786 .316 26.4 1.629 .218

L = 1.65 HMIN = 149. R = .2493 B/REQ = 3.5700 EQPA = 31.96
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.

90 1.897 .109 14.8 .1557 .090
0

L = 1.65 HMIN = 4. R = .3041 P/REQ = 4.3527 EQPA = 28.50
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.

90 19.2
0 25.4
0 .0955 .095 .0370 .027 949-5 95-6 152.6 .0201 .010

SATELLITE 573-3 ENERGY SPECTRUM LISTING

L = 1.75	HMIN = 4271.	R = .1607	B/REQ = 1.0413	EQPA = 78.51
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 286.6	4.84	59.55	1.64	33.02
90 3144	13.1	644.9	3.73	263.5
0 27403	66.1	5780	20.8	2117
L = 1.74	HMIN = 3598.	R = .0752	B/REQ = 1.2746	EQPA = 52.34
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 174.3	2.03	33.88	.720	28.54
90 2191	6.83	478.7	2.31	199.6
0 19509	37.3	4243	12.2	1500
L = 1.74	HMIN = 2617.	R = .1069	B/REQ = 1.8150	EQPA = 47.32
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 16.54	.35	6.776	.713	11.78
90 181.7	4.19	237.3	1.61	28.47
0 7363	22.4	1979	8.20	704.0
L = 1.74	HMIN = 1760.	R = .1438	B/REQ = 2.4246	EQPA = 39.96
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.746	.633	3151	.129	1.277
90 295.9	4.35	103.9	1.62	38.74
0 2624	22.3	871.9	9.22	333.4
L = 1.75	HMIN = 1337.	R = .1671	B/REQ = 2.8264	EQPA = 36.06
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .6893	.230	1.029	.275	7.230
90 193.5	4.87	51.58	1.64	20.41
0 1698	29.2	595.7	17.0	217.6
L = 1.75	HMIN = 942.	R = .1872	B/REQ = 3.2115	EQPA = 33.92
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .5676	.358	.1961	.098	.0368
90 76.96	4.74	46.93	3.17	11.64
0 460.5	21.9	162.7	0.02	55.85
L = 1.73	HMIN = 541.	R = .1941	B/REQ = 3.2279	EQPA = 33.82
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .1838	.092	.1.5	.1216	.054
90 97.06	11.9	26.10	3.10	11.64
0 412.2	28.2	275.3	18.3	133.0
L = 1.75	HMIN = 748.	R = .2037	B/REQ = 3.4765	EQPA = 32.43
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0368	.037	.0245	.025	.0279
90 45.53	3.66	23.77	2.41	5.923
0 427.5	23.8	151.5	9.79	51.40
L = 1.74	HMIN = 551.	R = .2116	B/REQ = 3.5804	EQPA = 31.90
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0735	.042	.0184	.013	.0324
90 23.53	1.96	12.62	1.24	5.247
0 275.8	13.8	146.1	6.72	39.65
L = 1.75	HMIN = 542.	R = .2215	B/REQ = 3.7603	EQPA = 30.95
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0147	.012	.0147	.012	.0275
90 27.34	2.03	5.147	.870	3.217
0 164.5	9.68	59.63	4.29	25.00

SATELLITE 573-3. ENERGY SPECTRUM LISTING

L = 1.76	HMTN = 454.	R = .2296	B/BEO = 3.9864	EQPA = 30.05
PA/EGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
90 4.412 1.80	5.801 1.12	1.259 .236	.8098 .172	.8733 .143
0 67.22 10.1	45.72 5.76	11.19 1.84		5.878 .653
				15.8 10.04 .729
1.0				
L = 1.74	HMTN = 344.	R = .2362	B/BEO = 3.9622	EQPA = 30.15
PA/EGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
90 2.614 .654	.7676 .184	.3064 .306	.3922 .179	.2876 .055
0 26.39 4.82	3.718 1.17	1.077 .423	.7.079 .520	3.238 .347
				75.0 3.642 .283
5.2				
L = 1.75	HMTN = 250.	R = .2452	B/BEO = 4.2427	EQPA = 29.04
PA/EGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
90 .4902 .347		.1762 .068	.1307 .046	.1834 .047
0 1.650 1.17		.3807 .470	1.340 .716	1.116 .204
				36.6 1.175 .157
2.8				
L = 1.75	HMTN = 143.	R = .2548	B/BEO = 4.3937	EQPA = 28.49
PA/EGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
90				
0		.6366 .450		.0490 .035
				2.0 .0399 .028
				.1703 .121
				17.8 .1726 .086
1.2				
L = 1.75	HMTN = 1.	R = .3103	B/BEO = 5.3050	EQPA = 25.73
PA/EGY= 5.5-8.	R.-13.	13.-25.	25.-50.	50.-100.
90 1.743 .308				
0 6.084 1.03				
				408-5 41-4 617-5 43-4
				28.8 .0477 80-4
				.01c0 .01e .0370 .018
				164.0 .1873 .030
17.0				

(. SATELLITE 573-3. ENERGY SPECTRUM LISTING

L = 1.85	HMIN = 4499.	R = .0594	B/BFO = 1.2044	EOPA = 65.67
PA/EGY= 5.5-8.	8.-13.	17.-25.	25.-50.	50.-100. T 5.5-100.
7 208.2	3.14	30.37	.927 22.76	.499 6.220 184 2.476 .091 28.0 13.78 1.76
90 2541	11.0	506.2	3.36 227.9	1.48 24.66 .317 7.303 .126 33.4 127.7 .396
W 21004	54.9	2489	17.6 1803	7.45 172.9 1.57 44.05 .548 204.4 1075 2.01
L = 1.84	HMIN = 3594.	R = .0782	B/BFO = 1.5728	EOPA = 52.89
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 81.37	1.82	17.04	.588 13.42	.309 6.193 .154 1.761 .061 38.0 7.394 .057
90 1750	7.25	368.2	2.23 161.3	1.07 15.33 .204 5.754 .037 50.4 89.55 .263
0 14320	36.6	3023	11.9 1283	5.05 69.49 .805 36.35 .410 310.2 737.7 1.35
L = 1.84	HMIN = 2581.	R = .1117	B/BFO = 2.2392	EOPA = 41.93
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 11.42	7.38	3.575	.322 3.603	.210 3.725 .145 1.090 .053 27.6 2.592 .050
90 756.4	4.81	213.1	1.98 75.72	.726 6.067 .160 3.332 .084 40.4 48.32 .216
0 7365	29.7	1832	10.6 599.6	3.87 21.45 .508 16.95 .332 241.6 397.7 1.11
L = 1.85	HMIN = 1786.	R = .1473	B/BFO = 2.9722	EOPA = 35.45
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 2.353	.589	2.205	.127 7.706	.474 1.8937 .121 1.4275 .053 10.6 5.5293 .148
90 717.4	5.24	103.6	2.42 31.07	.747 4.272 .182 1.060 .090 16.5 19.22 .212
0 2719	28.7	940.9	12.3 276.8	4.24 41.72 1.14 12.75 .444 93.6 175.0 1.20
L = 1.85	HMIN = 1301.	R = .1739	B/BFO = 3.5145	EOPA = 32.74
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 18.38	.374			.2941 .0F9 .0E40 .030 *2 .1291 .025
90 173.7	5.05	59.87	1.92 16.77	.683 3.444 .205 1.397 .039 11.6 11.03 .192
0 1213	27.3	407.2	9.76 124.9	3.17 34.75 1.18 13 24 517 72.6 85.34 .950
L = 1.85	HMIN = 952.	R = .1914	B/BFO = 3.8746	EOPA = 30.53
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7				.1471 .147 .1471 .104 .5 .1945 .112
90 11.4	9.33	35.29	2.34 8.578	.976 2.868 .459 .9559 .187 2.4 7.759 .345
0 1219	59.5			25.25 2.71 4.382 .803 6.2 67.38 2.99
L = 1.85	HMIN = 868.	R = .1972	B/BFO = 3.9725	EOPA = 30.11
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7				1.2
90 64.71	6.97	42.40	3.22 8.570	1.15 1.912 .375 .5147 .138 2.2 6.313 .334
0 247.1	13.3	44.25	3.39 21.77	1.78 6.981 .695 16.6 34.55 1.26
L = 1.85	HMIN = 742.	R = .2074	B/BFO = 4.2327	EOPA = 29.08
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7				1.4
90 44.12	4.65	11.07	2.05 3.676	1.06 1.691 .353 1.029 .195 1.8 3.631 .280
0 476.4	34.3	133.5	13.9 32.44	4.72 7.338 1.07 8.2 32.31 1.74
L = 1.85	HMIN = 639.	R = .2162	B/BFO = 4.2637	EOPA = 28.97
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7				3.2
90 50.49	4.97	13.05	1.55 1.379	.460 1.949 .268 .6618 .156 3.0 3.294 .207
0 388.7	25.0	144.3	11.1	15.54 1.63 5.161 .645 14.0 30.97 1.30
L = 1.85	HMIN = 547.	R = .2243	B/BFO = 4.5185	EOPA = 28.06
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7				.0768 .037 3.9 .0102 .010
90 35.29	5.09	13.73	1.83 2.574	.397 1.324 .197 4.097 .066 4.4 2.034 .134
0 128.9	12.2	93.86	6.71 27.68	2.54 10.54 1.07 7.294 .429 26.2 15.95 .684

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.84	HMIN = 455.	R = .2323	R/BFO = 4.6644	EOPA = 27.58
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
			.0245 .025	5.4 720-5 72-4
90	9.664 1.42 3.971	.764 .7149 .270	.7647 .150 .3125	.076 4.8 .9969 .090
0	85.30 3.23 32.47	3.52 8.276 1.15	4.396 .604 2.570	.324 36.6 7.575 .399
L = 1.85	HMIN = 350.	R = .2429	R/BFO = 4.9995	EOPA = 26.60
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
				1.4 T 5.5-100.
90	5.882 2.08 1.654	.551 .6127 .217	.0490 .049	.2206 .064 3.4 .4349 .071
0	76.33 5.90 19.13	3.55		
L = 1.87	HMIN = 229.	R = .2506	R/BFO = 4.0259	EOPA = 26.78
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
				2.2 T 5.5-100.
90			11.01 .481 .0613	.027 5.0 4.116 .179
0			69.27 3.02 .8935	.249 22.8 19.12 .781
L = 1.85	HMIN = 154.	R = .2571	R/BFO = 5.2385	EOPA = 25.91
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
				4.4 T 5.5-100.
90			.0245 .017	5.0 .0156 .011
0			.6158 .233 .2268	.101 32.6 .2827 .092
L = 1.85	HMIN = 1.	R = .3182	R/BFO = 6.4310	EOPA = 23.22
PA/EGY = 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
				14.8 T 5.5-100.
90			957-5 96-4	28.6 136-5 14-4
0			.1100 .063 .0174	.017 164.5 .0186 93-4

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.98	HMIN = 6073.	B = .0477	R/BEO = 1.1864	EQPA = 66.65	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
			2.059 .550 .9976 .191	.5 2.658 .415	
90 1722	50.3 401.5	17.2 126.4	5.48 23.09	1.30 1.2 107.4 1.47	
				125 5 6.76 23.66 1.85 3.8 111.6 4.75	
L = 1.95	HMIN = 4580.	B = .0602	R/BEO = 1.4235	EQPA = 56.95	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7 177.5	7.31 26.65	.783 14.07	.351 2.826	.114 .9083 .044 33.6 7.916 .095	
90 2132	9.08 341.7	2.51 173.8	1.17 20.70	.283 4.754 .100 38.0 175.9 .720	
	0 18583	47.9 3051	17.8 1416	6.14 162.5 1.41 31.09	.441 232.8 897.5 1.72
L = 1.95	HMIN = 3601.	B = .0805	R/BEO = 1.9005	EQPA = 46.50	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7 64.30	1.63 9.865	.550 8.119	.776 2.074	.111 .6589 .7043 25.8 14.335 .081	
90 1449	7.49 270.6	2.23 129.7	.929 11.37	.197 2.074 .057 42.8 63.34 .251	
	0 12995	40.3 2633	17.8 1196	5.61 83.07 1.02 11.23	.264 231.5 562.6 1.48
L = 1.94	HMIN = 2615.	B = .1134	R/BEO = 2.6630	EQPA = 37.74	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7 25.42	1.33 4.412	.384 1.195	.175 1.211	.092 .3798 .029 22.5 1.515 .051	
90 871.3	7.31 172.2	1.90 50.70	.751 3.731	.132 .9113 .045 31.4 37.42 .215	
	0 5701	32.9 1614	11.3 577.8	4.36 22.44	.598 5.742 .217 132.8 343.8 1.20
L = 1.95	HMIN = 1776.	B = .1528	R/BEO = 3.6130	EQPA = 31.74	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7 1.471 .600	.3151 .182		.3676 .116	.1471 .047 4.8 .2350 .044	
90 334.5	7.39 97.55	2.82 17.07	.864 2.731	.240 .5223 .065 8.2 19.15 .293	
	0 2794	39.5 706.0	17.9 155.9	4.39 18.90	1.06 4.596 .366 50.8 141.0 1.46
L = 1.94	HMIN = 1256.	B = .1799	R/BEO = 4.2275	EQPA = 29.10	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7 .2181 .217	.1050 .105		.0735 .042	.0420 .071 6.7 .3584 .019	
90 225.1	5.25 52.22	1.56 11.64	.524 2.014	.151 .6052 .059 13.4 19.96 .179	
	0 1507	26.2 504.5	10.5 114.8	3.17 1.50	.875 4.438 .305 58.6 90.27 1.01
L = 1.96	HMIN = 353.	B = .1961	R/BEO = 4.7161	EQPA = 27.42	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7				1.8	
90 137.7	8.22 28.92	2.66 4.902	1.23 2.059	.550 .2696 .091 2.2 7.781 .371	
	0 959.6	49.5 180.5	12.8 41.62	3.85 11.03	1.46 3.580 .599 16.0 46.65 1.50
L = 1.95	HMIN = 842.	B = .2044	R/BEO = 4.8631	EQPA = 25.97	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7				1.0	
90 89.71	6.67 46.57	3.38 4.442	.583 .7647	.150 .2819 .059 4.2 4.446 .203	
	0 779.4	33.5 320.8	15.3	10.45 1.23	2.032 384 16.0 51.79 1.58
L = 1.95	HMIN = 755.	B = .2106	R/BEO = 5.0415	EQPA = 26.45	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
15				1.4	
90		3.676 1.06			
W 232.2	36.7 148.0	20.7 24.19	6.98	2.003 .318 3.6 24.10 2.27	
L = 1.95	HMIN = 650.	B = .2198	R/BEO = 5.2295	EQPA = 25.93	
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	
				T 5.5-100.	
7				1.5	
90 60.29	6.66 5.147	1.95 3.370	1.02 1.029	.275 .1225 .055 1.8 2.572 .236	
	0 274.7	24.7 100.5	10.6 21.17	3.02 5.582	1.12 1.572 .476 13.0 17.72 1.02

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 1.04 HMTN = 547. B = .2280 B/REQ = 5.3331 EQPA = 25.55
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 90 22.06 4.03 11.76 1.70 3.523 .735 .2941 .12P 2.2 1.892 .183
 0 74.94 4.85 1.742 .711 .4754 .251 5.8 8.077 1.03
 L = 1.04 HMTN = 447. B = .2363 B/REQ = 5.5530 EQPA = 25.11
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 90 21.18 2.51 9.139 .980 1.103 .260 .4412 .180 .2574 .097 4.2 1.760 .128
 0 167.3 14.6 61.84 6.25 8.151 1.46 2.903 .581 1.225 .262 24.0 9.987 .562
 L = 1.05 HMIN = 349. B = .2443 B/REQ = 5.7677 EQPA = 24.51
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 90 1.593 .442 .3064 .153 .1176 .059 .1471 .042 4.2 .3057 .057
 0 14.51 4.38 15.15 3.09 7.625 1.42 1.742 .503 1.179 .327 20.8 3.236 .348
 L = 1.05 HMIN = 251. B = .2549 B/REQ = 6.1114 EQPA = 23.86
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 90 .5882 .416 .1471 .060 2.8 .1112 .039
 0 4.147 2.39 1.152 .576 .7573 .309 .4238 .171 21.6 .7465 .163
 L = 1.04 HMIN = 139. B = .2624 B/REQ = 6.0997 EQPA = 23.82
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 90 .0210 .015 2.6 .0299 .021
 0 .5806 .237 15.8 .2916 .119
 L = 1.05 HMIN = 2. B = .3212 B/REQ = 7.6184 EQPA = 21.24
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 90 420-5 42-4 29.0 134-5 13-4
 0 .1658 .157 .1025 .059 .0326 .023 .0164 .012 176.0 .0749 .012

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 2.12	HMIN = 5224.	R = .0492	B/REQ = 1.5028	EQPA = 54.55
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 176.7	4.16 19.71	1.70 13.60	.646 1.516	.131 .1961 .040 11.4 9.119 .176
90 1630	12.6 273.1	3.42 111.3	1.51 17.08	.456 4.186 .143 14.2 79.28 .463
0 13787	69.0 1859	18.0 394.0	7.38 163.1	2.40 37.91 .814 94.0 641.9 2.42
L = 2.09	HMIN = 4557.	R = .0634	B/REQ = 1.8687	EQPA = 47.01
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 98.69	1.48 17.98	.441 6.076	.181 .8363	.043 .1591 .013 66.6 4.730 .053
90 1397	5.38 188.8	1.75 103.7	.641 14.07	.170 2.439 .048 74.8 63.66 .182
0 11983	27.7 1553	6.95 912.0	3.44 121.1	.877 20.36 .256 467.6 555.8 .360
L = 2.09	HMIN = 3559.	R = .0852	B/REQ = 2.4861	EQPA = 39.76
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 44.23	1.29 12.46	.473 2.952	.166 .5556	.048 .0873 .014 36.4 2.554 .052
90 1001	5.32 160.3	1.52 85.51	.703 6.536	.136 .7015 .032 51.6 43.32 .131
0 9124	29.6 1360	8.12 743.9	3.88 49.02	.692 5.708 .167 239.8 426.4 1.75
L = 2.09	HMIN = 2647.	R = .1162	B/REQ = 3.3055	EQPA = 32.87
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 7.402	.502 2.131	.231 7.813	.091 .3493	.040 .0528 .011 30.6 5.5751 .026
90 640.1	4.85 119.2	1.51 44.68	.585 1.876	.085 .1961 .019 39.6 23.61 .171
0 6002	26.9 1124	8.39 390.6	3.14 12.26	.390 1.921 .100 274.9 273.3 .945
L = 2.09	HMIN = 1745.	R = .1584	B/REQ = 4.5690	EQPA = 27.89
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1021	.102 .0430	.049 .0184	.018 2.8 .0417 .024	
90 309.8	6.44 65.39	2.46 19.35	.920 1.176	.139 .1261 .036 8.4 15.49 .276
0 2049	47.6 747.1	14.6 142.9	4.12 11.00	.802 1.764 .224 51.0 141.0 1.46
L = 2.09	HMIN = 1230.	R = .1877	B/REQ = 5.5165	EQPA = 25.20
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .5832	.204			.0184 .013 9.4 .0238 .974
90 153.9	4.68 53.16	1.09 7.496	.391 .8007	.081 .1211 .023 14.2 6.670 .135
0 1141	19.3 355.2	7.70 72.50	2.24 8.446	.525 1.178 .147 87.4 61.49 .775
L = 2.09	HMIN = 943.	R = .2001	B/REQ = 5.8472	EQPA = 24.43
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0735	.052			3.0 .0259 .018
90 177.1	7.22 35.42	2.08 6.740	.587 6.773	.125 .0735 .042 5.2 7.471 .243
0 1187	33.9 335.5	12.1 54.81	3.22 4.307	.635 .7359 .193 31.4 57.30 1.18
L = 2.09	HMIN = 848.	R = .2788	B/REQ = 6.1015	EQPA = 23.83
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0490	.049			3.2 .0122 .012
90 98.77	4.92 71.13	1.95 2.451	.388 .7353	.190 .1724 .044 5.0 5.610 .209
0 917.9	30.3 198.4	9.88 28.87	2.02 3.175	.537 1.113 .232 30.4 37.59 .976
L = 2.10	HMIN = 751.	R = .2171	B/REQ = 6.4320	EQPA = 23.13
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .20				
90 79.62	4.09 21.08	1.61 3.728	.436 .5147	.097 .0019 .020 7.0 3.679 .143
0 637.7	20.7 193.2	9.17 28.73	1.99 3.540	.501 .7789 .166 42.2 32.46 .759
L = 2.13	HMIN = 651.	R = .2255	B/REQ = 6.9566	EQPA = 22.28
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .1.2				
90 74.71	4.10 9.069	1.49 2.859	.540 .2357	.087 2.6 1.545 .129
0 557.1	27.7 112.7	8.80 18.45	2.36 1.379	.511 .4938 .182 21.0 23.77 .931

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 2.04	HMIN = 549.	B = .2329	R/REQ = 6.6985	EQPA = 22.73
PA/EGY= 5.5-R.	8.-13.	13.-25.	25.-50.	50.-100.
T 5.5-100.				
1.6				
90 47.79 4.19 11.79 2.09 1.940 .44E .2206 .127 .2F96 .081 2.8 2.719 .134				
0 358.7 27.7 65.31 9.23 12.89 2.20 2.903 .704 1.708 .382 15.6 15.11 .867				
L = 2.10 HMIN = 451. B = .2420 R/REQ = 7.1431 EQPA = 21.37				
PA/EGY= 5.5-R.	8.-13.	13.-25.	25.-50.	50.-100.
T 5.5-100.				
2.0				
90 13.24 2.55 6.614 1.55 1.838 .336 .1113 .064 .0735 .042 3.4 .3258 .103				
0 102.3 11.9 64.59 6.85 10.82 1.8E 2.220 .616 .5576 .226 18.8 8.854 .502				
L = 2.08 HMIN = 350. B = .2491 R/REQ = 7.1852 EQPA = 21.30				
PA/EGY= 5.5-R.	8.-13.	13.-25.	25.-50.	50.-100.
T 5.5-100.				
2.4				
90 3.922 1.79 2.500 .606 .1961 .09c .0368 .037 3.2 .3647 .057				
0 59.06 9.18 20.32 3.84 1.319 .417 .5273 187 16.9 3.931 .424				
L = 2.08 HMIN = 244. B = .2571 R/REQ = 7.7839 EQPA = 21.53				
PA/EGY= 5.5-R.	8.-13.	13.-25.	25.-50.	50.-100.
T 5.5-100.				
2.7				
90 2.451 1.10 .7353 .329 .0613 .061 .1471 .074 .0123 .012 4.6 .1353 .034				
0 7.547 2.09 1.628 .615 .7257 .296 .1314 .105 19.8 1.125 .239				
L = 2.04 HMIN = 145. B = .2667 R/REQ = 7.7486 EQPA = 21.03				
PA/EGY= 5.5-R.	8.-13.	13.-25.	25.-50.	50.-100.
T 5.5-100.				
4.2				
90 .0210 .021 .0294 .021 6.0 .0195 .011				
0 .1569 .111 .1177 .068 36.2 .1051 .047				
L = 2.04 HMIN = 9. B = .3724 R/REQ = 9.7873 EQPA = 18.65				
PA/EGY= 5.5-R.	8.-13.	13.-25.	25.-50.	50.-100.
T 5.5-100.				
3.0 118-5 12-4				
90 .0118 .012 86.06 .475 555-5 28-4 56.4 22.61 .125				
0 295.5 1.67 .0438 .014 333.4 75.53 .417				

() SATELLITE S73-3. ENERGY SPECTRUM LISTING

()	$L = 2.30$	$HMIN = 6426.$	$R = .0492$	$R/REQ = 1.9303$	$EQPA = 46.03$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7 96.58 2.95 12.60 .786 5.396 .307 .7996 .086 .0776 .018 16.5 4.005 .097				
()	90 849.2 7.07 80.73 1.57 51.02 .791 9.950 .258 2.255 .096 22.8 79.72 .260				
	0 8061 44.0 678.5 8.35 446.9 4.71 83.25 1.41 17.89 .459 122.2 335.5 1.45				
()	$L = 2.29$	$HMIN = 4697.$	$R = .0646$	$R/REQ = 2.4983$	$EQPA = 39.25$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7 74.70 1.33 9.714 .322 3.956 .146 .7713 .072F .0712 62-4 59.4 2.962 .044				
()	90 708.6 3.63 70.80 .931 46.78 .459 7.452 .125 1.199 .037 69.2 73.55 .138				
	0 5223 21.0 621.0 4.75 418.4 2.47 64.47 .671 9.915 .188 409.8 273.1 .715				
()	$L = 2.30$	$HMIN = 3511.$	$R = .0912$	$R/REQ = 3.5502$	$EQPA = 32.05$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7 72.77 1.04 5.504 .351 .7564 .085 .1898 .030 646-5 32-4 32.0 1.031 .035				
()	90 530.4 4.53 60.86 .976 79.07 .527 2.784 .096 .7502 .026 41.8 22.17 .144				
	0 5253 24.8 575.4 5.81 .772.1 3.02 22.02 .515 7.812 .130 244.6 226.4 .343				
()	$L = 2.28$	$HMIN = 2654.$	$R = .1213$	$R/REQ = 4.6298$	$EQPA = 27.69$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7 11.38 1.16 1.264 .265 .657 .078 .2022 .043 .0226 .011 13.3 4.398 .075				
	90 467.5 5.72 58.17 1.50 23.77 .732 .3478 .086 .0539 .016 17.8 21.72 .218				
	0 4152 32.8 549.9 8.60 205.8 3.41 7.835 .320 .3142 .066 108.4 169.5 1.17				
()	$L = 2.29$	$HMIN = 1697.$	$R = .1676$	$R/REQ = 6.3435$	$EQPA = 23.33$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	15 6.513 1.17 .8403 .297 .0875 .052 .0570 .036 .0210 .015 7.0 2.557 .038				
()	90 257.2 9.84 51.96 3.57 7.965 .791 .3579 .142			4.2 9.671 .290	
	0 2217 50.7 364.1 15.2 73.62 4.40 2.903 .593			24.7 89.27 1.69	
()	$L = 2.27$	$HMIN = 1254.$	$R = .1931$	$R/REQ = 7.2929$	$EQPA = 21.73$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7 98 162.4 5.15 31.20 1.31 6.180 .616 .1878 .082 .0245 .025 5.6 9.712 .260		5.2		
	90 1874 30.4 312.7 11.4 34.61 2.41 1.451 .342 .4562 .138 35.4 70.46 1.24				
()	$L = 2.21$	$HMIN = 956.$	$R = .2084$	$R/REQ = 8.2406$	$EQPA = 20.39$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7 .49M2 .347			5.0 .0156 .011	
	90 99.53 5.38 32.72 2.00 1.915 .271 .1471 .074 .0763 .026 5.4 4.741 .195				
	0 945.4 27.2 212.3 9.38 19.87 1.85 .9391 .283 .2483 .102 35.2 40.34 .978				
()	$L = 2.27$	$HMIN = 843.$	$R = .2140$	$R/REQ = 7.9364$	$EQPA = 20.72$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7			1.4	
()	90 136.8 14.2 20.15 1.72 2.528 .440 .3431 .130			3.2 3.293 .200	
	0 1023 41.0 245.8 14.9			2.709 .724 .2561 .148 13.0 52.40 1.76	
()	$L = 2.29$	$HMIN = 746.$	$R = .2231$	$R/REQ = 8.5490$	$EQPA = 20.00$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7			3.0	
	90 51.96 5.05 16.18 3.45 2.298 .593 .1471 .104 .0768 .037 2.0 2.840 .235				
	0 374.3 23.9 82.50 7.94 8.275 1.62 1.016 .364 .2792 .132 19.2 15.56 .789				
()	$L = 2.28$	$HMIN = 547.$	$R = .2315$	$R/REQ = 8.8359$	$EQPA = 19.66$
	PA/EGY= 5.5-8.	8.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.		
	7			2.0	
	90 61.76 3.37 10.29 .917 .9191 .1RR .10E0 .047 .0245 .017 7.5 2.524 .114				
	0 517.9 10.9 92.43 5.94 10.50 1.26 .8403 .253 .3266 .109 38.8 19.99 .529				

() SATELLITE 573-3. ENERGY SPECTRUM LISTING

() L = 2.32 HMIN = 556. B = .2404 B/BEO = 9.6302 EQPA = 18.80
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 90 44.12 4.03 8.323 1.01 1.174 .245 .0588 .042 .0123 .012 5.4 1.542 .105
 0 226.9 13.2 62.49 5.02 7.430 1.13 .3923 .175 .0785 .055 36.6 10.53 .470

() L = 2.31 HMIN = 446. B = .2503 B/BEO = 9.8716 EQPA = 18.56
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 90 41.91 5.55 4.657 1.07 .1532 .153 2.9 1.070 .122
 0 150.9 17.1 28.12 5.05 4.159 1.25 .1708 .171 .2561 .149 16.2 5.878 .528

() L = 2.27 HMIN = 329. B = .2569 B/BEO = 9.6344 EQPA = 18.73
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 90 7.353 1.90 2.206 .901 .3064 .217 .1471 .147 1.9 .5137 .105
 0 2.99 1.35 .7257 .419 .1319 .132 6.9 1.129 .357

() L = 2.73 HMIN = 760 B = .2662 B/BEO = 10.7747 EQPA = 17.74
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 90 7.225 3.23 1.451 1.45 1.14 .181 7.0 .3291 .190

() L = 2.26 HMIN = 131. B = .2726 B/BEO = 10.1195 EQPA = 18.32
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 90 2.233 .158 8.2 .1873 .132
 0

() L = 2.29 HMIN = 0. B = .3452 B/BEO = 13.3851 EQPA = 15.95
PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 .9408 .841 32.4 120-5 12-4
 90 .0263 .026 12.07 .267 748-5 43-4 306-5 22-4 53.4 1.436 .933
 0 40.34 .891 .0752 .027 .036 .011 306.5 5.152 .114

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 2.50	HMIN = 5444.	B = .0518	E/REO = 2.6136	EOPA = 39.21
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 47.67 1.57 5.353 .424 3.257 1.92 2.899 .032 .010 26.4 1.991 .054				
90 316.3 4.23 23.96 .779 13.33 .432 4.016 .147 .7692 .047 28.0 13.06 .135				
0 3120 23.0 172.7 3.82 166.6 2.24 32.90 .741 6.237 .227 173.5 121.2 .732				
L = 2.49	HMIN = 4753.	B = .0668	E/REO = 3.3261	EOPA = 37.26
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 36.90 1.14 4.209 .257 1.048 .103 1.798 .027 .0266 65.4 4.6 1.405 .034				
90 325.6 2.95 25.16 .586 18.52 .310 2.702 .082 .3971 .023 56.8 13.10 .095				
0 3133 16.5 220.3 3.07 165.4 1.71 22.71 .437 3.132 116 338.2 122.4 .327				
L = 2.49	HMIN = 3569.	B = .0934	E/REO = 4.6226	EOPA = 27.72
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 19.22 .987 1.763 .214 .2829 .058 1.318 .026 .0141 53.4 28.0 .7086 .071				
90 276.4 3.51 25.28 .801 17.87 .427 1.244 .072 .0897 .013 37.6 10.75 .112				
0 2453 18.6 248.1 4.25 169.5 2.19 8.523 .749 .7836 .075 201.8 102.3 .624				
L = 2.49	HMIN = 2671.	B = .1256	E/REO = 6.2238	EOPA = 23.63
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 5.070 .857 1.6434 .243 .0134 .015 .0147 .015 7.5 .2201 .034				
90 251.1 5.14 25.74 1.38 11.31 .537 .3046 .057 .0327 .016 11.8 10.60 .187				
0 2449 33.9 273.7 7.94 89.39 2.91 5.806 .517 .1340 .055 67.4 30.80 1.05				
L = 2.50	HMIN = 1550.	B = .1745	E/REO = 8.7098	EOPA = 19.31
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
15 4.412 1.47 2.6 .1347				
90 170.1 9.78 19.12 2.65 4.136 .706 .1471 .104				2.0 5.019 .312
0 1164 57.6 197.1 17.4 24.77 3.97 1.847 .698				10.2 42.01 1.79
L = 2.49	HMIN = 1359.	B = .1892	E/REO = 9.3980	EOPA = 19.04
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 1.2				
90 98.53 6.02 19.49 1.89 1.838 .375 .0490 .049 .0245 .025 3.6 4.323 .216				
0 925.7 38.6 167.3 11.3 13.63 2.09 .4593 .265 .1528 .108 18.8 34.35 1.19				
L = 2.47	HMIN = 929.	B = .2142	E/REO = 10.3220	EOPA = 18.13
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 1.4				
90 48.53 8.45 .9191 .375 .0508 .042 .0147 .015 2.6 .6235 .097				
0 222.0 10.5 76.84 8.10 8.693 1.81 .9071 .406 13.2 14.43 .316				
L = 2.50	HMIN = 856.	B = .2238	E/REO = 11.2920	EOPA = 17.31
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 3.2				
90 57.36 3.75 4.902 .633 .4979 .138 .0210 .021 6.8 1.877 .104				
0 637.3 23.5 91.48 6.34 3.913 .874 .3415 .171 .0484 .048 72.9 22.36 .724				
L = 2.49	HMIN = 758	B = .2300	E/REO = 11.4661	EOPA = 17.18
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .2				
90 43.38 5.65 6.618 1.56 1.532 .484 2.0 1.692 .191				
0				1.6
L = 2.47	HMIN = 641.	B = .2392	E/REO = 11.5331	EOPA = 17.09
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 2.0				
90 74.56 5.04 .0735 .074 .0368 .027 1.2 1.589 .227				
0 142.5 19.4 18.47 4.94 6.048 1.91 .5876 .411 8.4 7.314 .818				

(SATELLITE ST3-3. ENERGY SPECTRUM LISTING

(L = 2.48 HMIN = 543. R = .2470 B/REQ = 12.1510 EQPA = 16.57
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 2.6
 90 31.76 3.06 3.493 .567 .3064 .108 .0430 .049 .0134 .018 5.5 1.034 .087
 0 287.2 17.3 40.25 4.34 1.756 .585 .3746 .187 .0907 .064 30.6 9.486 .488

(L = 2.50 HMIN = 451. R = .2555 B/REQ = 12.7681 EQPA = 16.25
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 2.7
 90 6.417 .926 3.431 .648 .0613 .061 .0245 .025 7.4 .4101 .046
 0 94.00 3.05 15.50 2.38 .9077 .770 .0764 .076 39.6 3.507 .264

(L = 2.52 HMIN = 354. R = .2659 B/REQ = 13.7410 EQPA = 15.55
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 1.4
 90 4.412 1.47 .3676 .368 2.8 .1389 .044
 0 30.43 6.65 3.056 1.53 .6366 .450 .0660 .066 20.2 1.054 .201

(L = 2.42 HMIN = 209 R = .2747 B/REQ = 12.4624 EQPA = 16.46
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 1.5 .2
 90 0 0.0
 0 0 .4

(L = 2.51 HMIN = 167. R = .2815 B/REQ = 14.3796 EQPA = 15.29
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 1.6
 90 0 1.2
 0 3.629 3.63 8.9 .0873 .087

(L = 2.49 HMIN = 0. R = .3613 B/REQ = 19.0117 EQPA = 17.63
 PA/EGY = 5.5-8. 8.-13. 13.-25. 25.-50. 50.-100. T 5.5-100.
 7 24.8
 90 0 44.0
 0 .3389 .196 .0117 .011 .0221 .011 257.6 .0238 94-4

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SATellite S73-3. ENERGY SPECTRUM LISTING									
L = 2.70	HMIN = 6529.	B = .0529	R/REQ = 3.3473	EQPA = 33.13					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7 27.90	1.11 2.194	.231 .4596	.068 .1773	.030 .0310	38-4	38.4	1.028	.036	
90 147.5	2.53 7.983	.410 5.490	.213 .7430	.054 .1756	.019	35.2	5.200	.076	
0 1215	12.8 60.86	.209 55.63	1.29 5.264	.270 .8694	.078	207.4	45.73	.410	
L = 2.69	HMIN = 4788.	B = .0692	R/REQ = 4.3703	EQPA = 28.72					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7 15.33	.751 1.703	.182 1.129	.030 .1670	.025 .0155	55-4	38.2	.5795	.074	
90 151.9	2.13 7.335	.758 5.572	.189 .4051	.074 .0573	.07-4	49.0	4.700	.061	
0 1356	11.8 72.36	1.94 52.87	1.07 2.550	.163 .4955	.050 230.5	47.61	.361		
L = 2.69	HMIN = 7587.	B = .0968	R/REQ = 6.0052	EQPA = 23.91					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7 5.031	.674 .3576	.130 .0161	.016 .0560	.020 .0175	78-4	19.2	.1763	.019	
90 118.0	2.43 8.118	.489 7.196	.138 .1662	.033 .0602	.014	24.6	4.471	.084	
0 1167	15.3 88.12	3.02 28.24	1.11 1.928	.204 .2073	.048 136.8	40.52	.478		
L = 2.70	HMIN = 2747.	P = .1267	R/REQ = 7.9916	EQPA = 20.72					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7 1.671	.600		.0234	.029		5.4	.0426	.016	
90 110.9	5.71 9.436	1.08 1.264	.270 .1471	.060 .0735	.028	6.4	3.039	.126	
0 1055	26.1 94.12	5.27 1.706	13.6 72.78	2.24 .4726	.126	43.4	216.9	1.96	
L = 2.70	HMIN = 1283.	B = .1978	R/REQ = 12.4484	EQPA = 16.45					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7						1.0			
90 18.82	2.35 4.559	.810 1.1838	.106 .0490	.049 .0245	.025	4.2	.3263	.093	
0 294.9	18.5 32.05	4.40 1.764	.667 .6310	.282 1.14	.105	24.0	10.30	.574	
L = 2.68	HMIN = 843.	B = .2283	R/REQ = 14.0497	EQPA = 15.47					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7						1.5			
90 24.26	4.22 2.574	.973		.0735	.074	2.4	.6646	.104	
0 133.5	16.1 16.59	4.15		.1935	.194	12.2	5.476	.587	
L = 2.70	HMIN = 755.	B = .2394	R/REQ = 15.2182	EQPA = 14.85					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7						4.2			
90 17.53	1.99 2.941	1.04		.0528	.042	4.0	.5447	.073	
0 77.61	8.74 8.008	2.00 .2085	.209 .2002	.142 .1451	.084	29.0	2.463	.256	
L = 2.71	HMIN = 643.	B = .2510	R/REQ = 16.0801	EQPA = 14.44					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7						.6			
90 1.471	1.47 .7353	.735 .3064	.706			1.4	.0634	.048	
0 82.25	19.9					3.6	3.626	.330	
L = 2.70	HMIN = 534.	B = .2578	R/REQ = 15.2425	EQPA = 14.37					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7						.5			
90 8.824	3.60 1.471	1.04				1.6	.1945	.069	
0 39.58	10.2 8.053	3.61 1.210	.855			6.0	2.815	.500	
L = 2.69	HMIN = 476.	B = .2651	R/REQ = 15.5169	EQPA = 14.24					
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.	T	5.5-100.			
7						2.6			
90 2.974	.973 1.287	.488				4.0	.1362	.036	
0 33.49	6.12 5.275	1.74 .2419	.242			25.6	1.230	.192	

SATELLITE S73-3. ENERGY SPECTRUM LISTING

L = 2.90	HMIN = 5590.	R = .0537	B/REQ = 4.2041	EQPA = 29.10
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 7.647 .567 .2709 .072 .0749 .023 .1476 .022 .0258 .72-4	39.6 .2574 .016			
90 43.75 1.27 1.919 .186 .3707 .084 .2703 .033 .0716 .012 38.8 1.514 .039				
0 344.4 6.50 22.67 1.17 5.754 .375 1.125 .117 .4269 .051 240.8 11.44 .191				
L = 2.89	HMIN = 4825.	R = .0715	B/REQ = 5.5745	EQPA = 25.06
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 5.147 .459 .2595 .081 .0265 .018 .0759 .019 .0245 .71-4	31.4 .2059 .016			
20 45.23 1.34 2.647 .203 .2716 .043 .1321 .025 .0619 .010 42.4 1.310 .035				
0 355.5 5.68 25.32 1.24 .011 .278 1.445 .137 .2965 .043 235.4 11.51 .194				
L = 2.89	HMIN = 3650.	R = .0983	B/REQ = 7.6401	EQPA = 21.71
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 1.496 .459 .0919 .055 .0490 .022 566-5 .57-4 15.5 .0674 .013				
90 30.31 1.57 2.528 .341 .1094 .049 .1746 .040 .0525 .017 15.6 1.147 .053				
0 260.7 8.49 22.83 1.79 1.762 .292 1.172 .181 .5303 .086 174.2 8.910 .256				
L = 2.89	HMIN = 2857.	R = .1253	B/REQ = 9.7487	EQPA = 19.58
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .4902 .490 .0245 .025 .0245 .025	4.8 .0162 .011			
90 25.15 1.92 1.576 .407 .2042 .102 .0735 .042 .0123 .012 7.0 1.073 .077				
0 204.4 15.5 29.03 3.52 .382 .661 1.076 .209 .3510 .124 34.4 10.94 .494				
L = 2.90	HMIN = 1156.	R = .2123	B/REQ = 16.5692	EQPA = 14.22
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0	.0			
90 .7357 .735 .7353 .425 .0294 .029 .0294 .029	3.8 .0512 .023			
0 18.87 5.23 4.838 1.33 .2887 .288 .2639 .157 .157	15.8 1.051 .219			
L = 2.86	HMIN = 813.	R = .2353	B/REQ = 17.6941	EQPA = 13.73
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0	.0			
90 .0735 .074 .0735 .074	.6 .0548 .065			
0 6.220 3.59 .8639 .864 .2073 .207 .2073 .207	4.2 .9142 .409			
L = 2.89	HMIN = 732.	R = .2476	B/REQ = 19.1941	EQPA = 13.20
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0	.0			
90 1.471 .849 .9804 .490 .0368 .027 .0368 .027	3.6 .0756 .020			
0 27.50 5.70 4.838 1.98 .0368 .027 .0368 .027	18.6 .3496 .138			
L = 2.92	HMIN = 566.	R = .2554	B/REQ = 20.3316	EQPA = 12.73
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0	.0			
90 5.882 2.94 .7676 .358 .0368 .017 .0368 .017	2.2 .1061 .043			
0 2.233 1.58 .4032 .403 .0368 .017 .0368 .017	8.6 .2679 .155			
L = 2.90	HMIN = 529.	R = .2575	B/REQ = 21.0731	EQPA = 12.55
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0	.0			
90 1.471 1.04 .7353 .425 .0884 .040 .0884 .040	2.2 .0884 .040			
0 26.33 5.35 4.465 2.23 .0884 .040 .0884 .040	9.6 1.120 .299			
L = 2.88	HMIN = 417.	R = .2763	B/REQ = 21.3188	EQPA = 12.51
PA/FGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100.
7 .0	.0			
90 1.471 1.47 .7676 .260 .0754 .025 .0754 .025	2.2 .0754 .025			
0 5.286 4.11 .0754 .025 .0754 .025	4.0 .3340 .222			

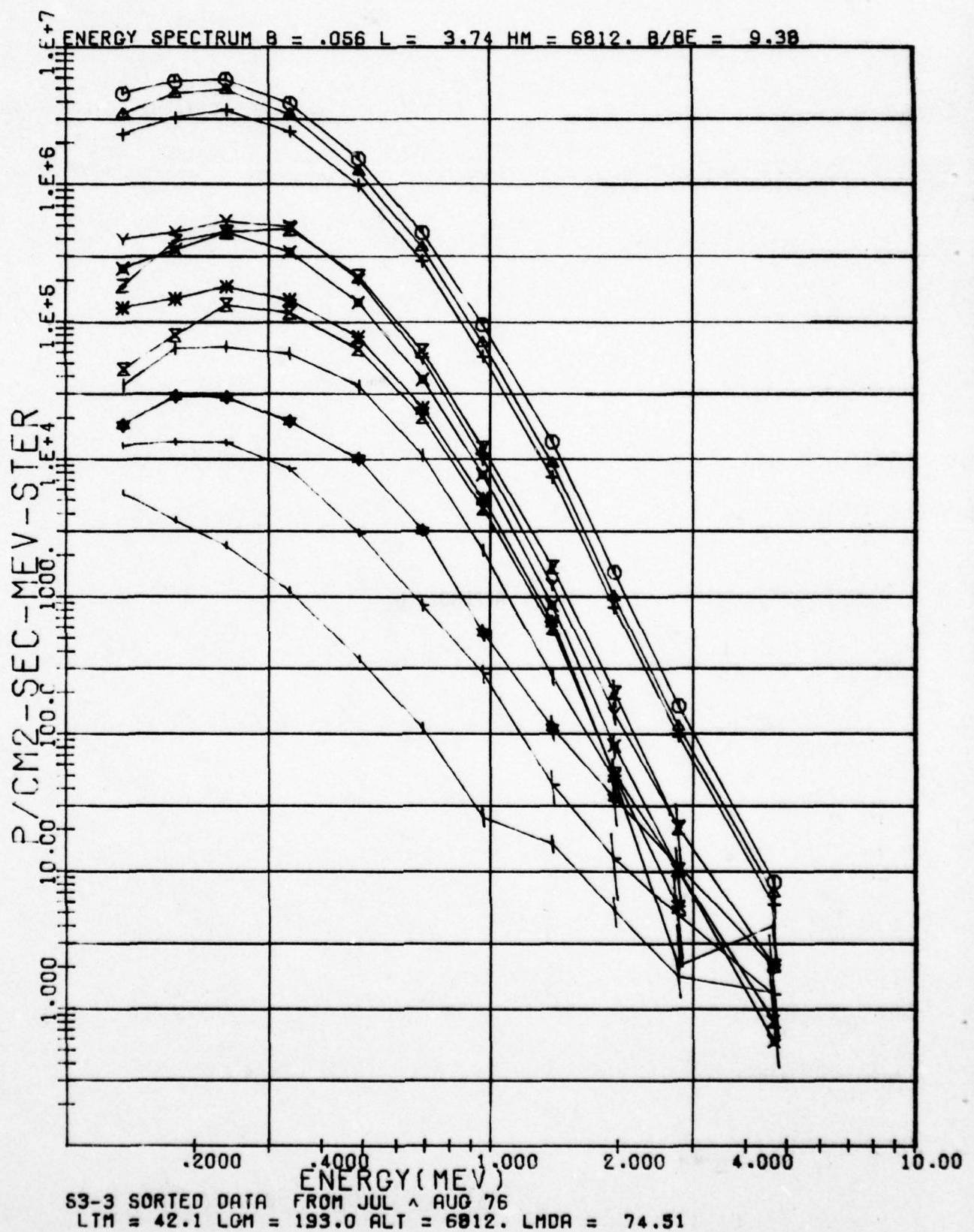
SATELLITE S73-7. ENERGY SPECTRUM LISTING

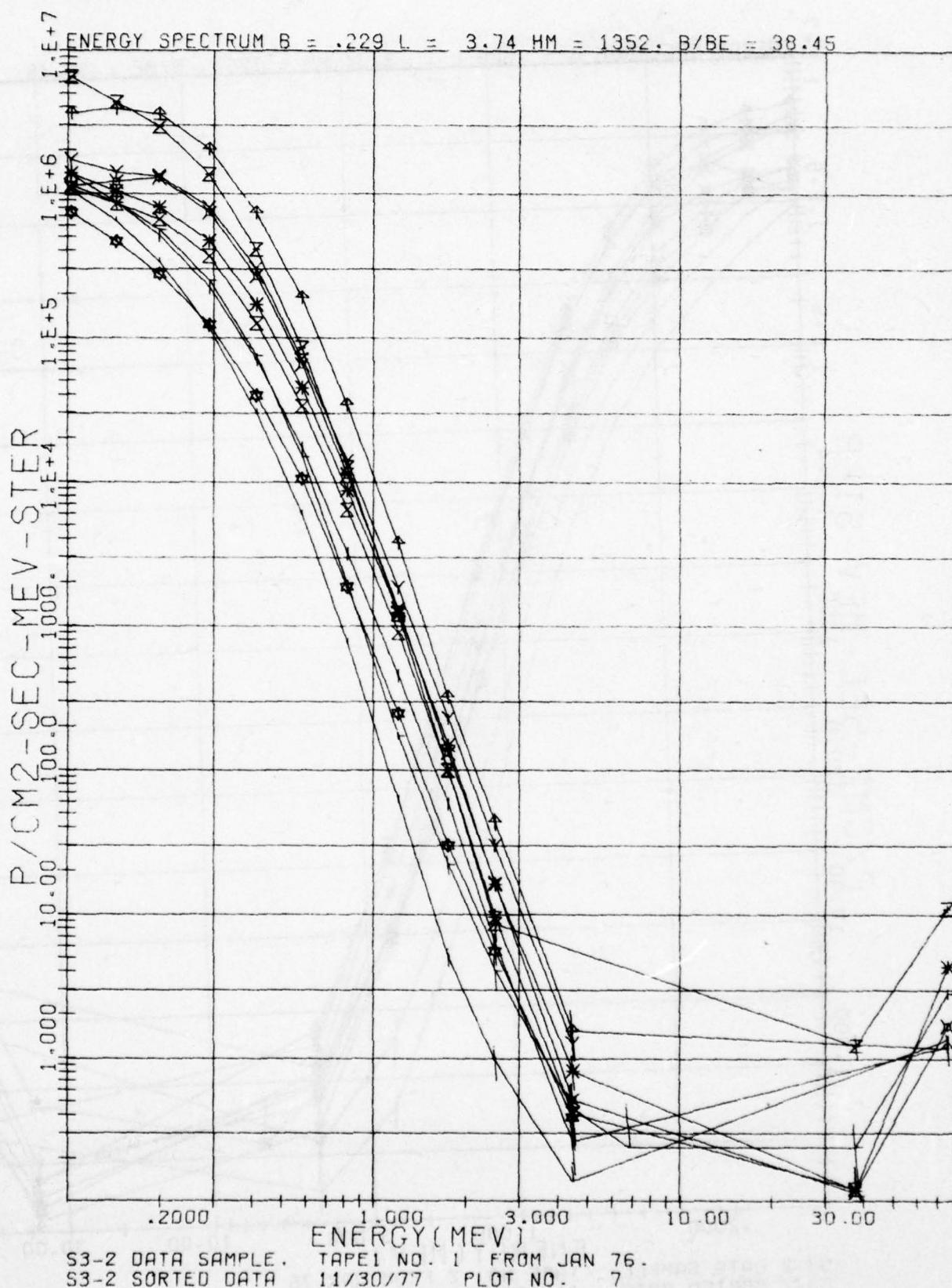
L = 3.24	HMIN = 6686.	R = .0546	B/REQ = 5.9945	EQPA = 24.11
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .8490 .115 .0566 .070 .978-5 .55-4 .0505 .87-4 .0110 .28-4	98.8 .7457 .42-4			
90 4.751 .259 .7238 .047 .0300 .95-4 .1612 .015 .0662 .67-4 .105.8 .2732 .91-4				
0 41.77 1.38 2.415 .235 .0577 .023 1.130 .072 .5284 .035 6.37.2 1.821 .047				
L = 3.24	HMIN = 4849.	R = .0752	B/REQ = 9.2103	EQPA = 20.43
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .675 .112 .0273 .017 .444-5 .44-4 .0498 .011 .540-5 .26-4	63.4 .1277 .41-4			
90 4.060 .290 .3003 .056 .0266 .011 .1331 .016 .0726 .82-4 .72.8 .2003 .010				
0 38.05 1.57 2.633 .298 .1783 .049 1.038 .084 .6757 .046 444.0 1.790 .056				
L = 3.22	HMIN = 3632.	R = .1079	B/REQ = 11.1743	EQPA = 17.44
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .1357 .0777	.0226 .011	28.2 .966-5 .37-4		
90 3.952 .426 .1716 .065 928-5 93-4 .6595 .054 .0712 .013 32.0 .3719 .020				
0 34.63 2.26 2.042 .396 15.92 .701 2.722 .202 .5715 .056 195.6 4.067 .126				
L = 3.18	HMIN = 2901.	R = .1284	B/REQ = 13.3021	EQPA = 15.31
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .0804 .597		2.2 .0354 .025		
90 1.638 .222	.0588 .042 .0768 .026	4.2 .0834 .028		
0 1.710 1.21 1.262 .092 .2880 .268 .6111 .306 .3058 .162 21.8 .4932 .132				
L = 3.07	HMIN = 1101.	R = .2207	B/REQ = 20.4683	EQPA = 12.77
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .15		2.4		
90 1.471 1.47		1.2 .0324 .032		
0 7.257 5.13		7.2 .2133 .151		
L = 3.20	HMIN = 950.	R = .2349	B/REQ = 24.7517	EQPA = 11.60
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .0804 .597		1.4		
90 1.102 .677	.3024 .702	3.8 .0307 .018		
0 5.529 2.76		20.4 .1846 .087		
L = 3.41	HMIN = 867.	R = .2488	B/REQ = 71.7104	EQPA = 10.28
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .08		.6		
90		2.2		
0	.2419 .242	7.2 .1067 .107		
L = 3.19	HMIN = 763.	R = .2547	B/REQ = 25.6870	EQPA = 11.15
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .0804 .597		1.2		
90 .5882 .416	.0613 .061 .0368 .037 .0184 .018	4.4 .0442 .020		
0 2.903 2.05	.1528 .153 .0691 .069	16.0 .1920 .095		
L = 3.22	HMIN = 659	R = .2676	B/REQ = 26.7038	EQPA = 10.75
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .0804 .597		4.4		
90 .3676 .212	.0588 .042	7.6 .0256 .011		
0 4.147 1.69 .3456 .346	.1382 .098	41.8 .1653 .055		
L = 3.25	HMIN = 553.	R = .2810	B/REQ = 31.4551	EQPA = 10.27
PA/EGY= 5.5-8.	8.-13.	13.-25.	25.-50.	50.-100. T 5.5-100.
7 .0804 .597		3.4		
90 .2451 .245		5.4 .720-5 .72-4		
0 .4682 .468		29.0 .0265 .026		

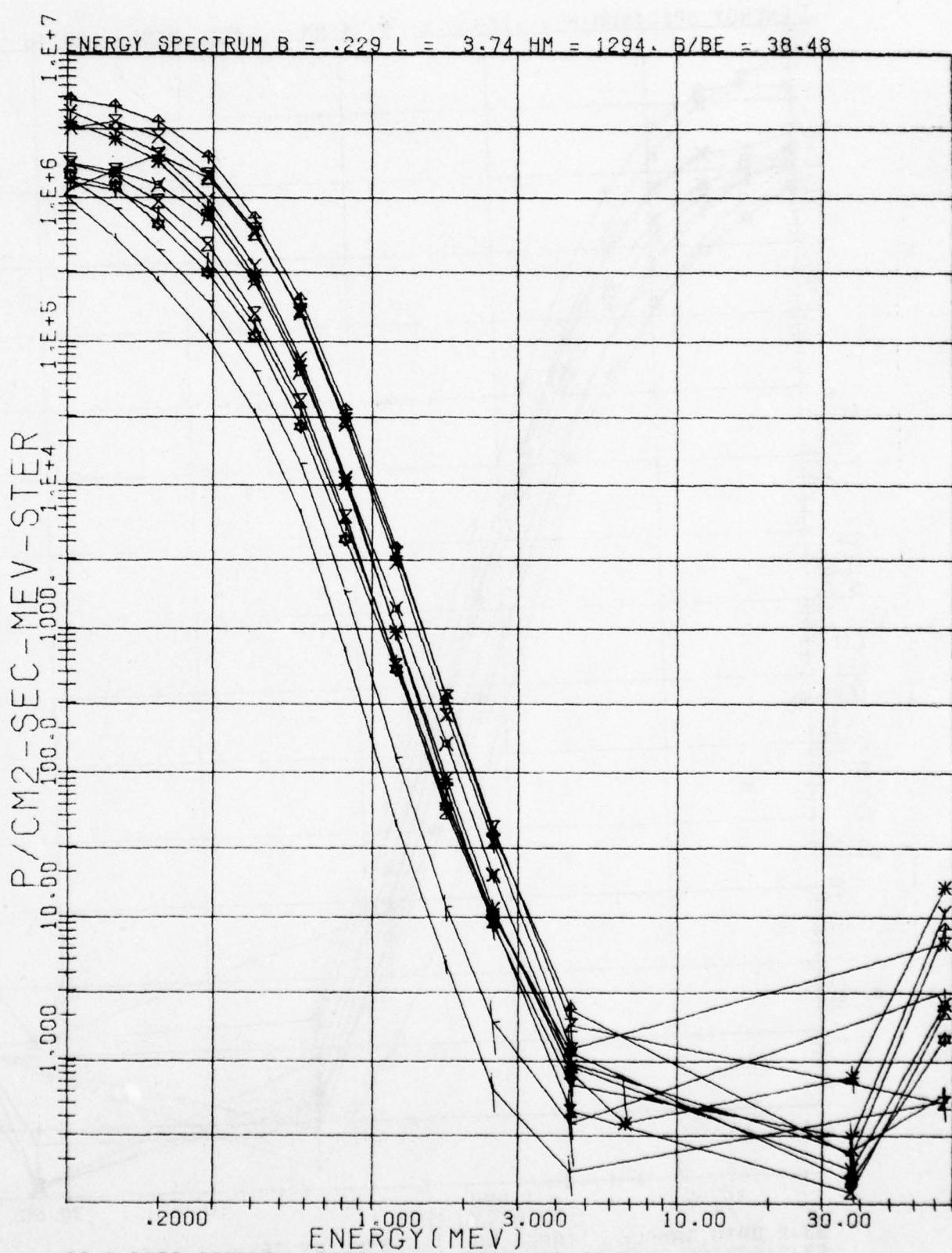
SATELLITE S73-T ENERGY SPECTRUM LISTING									
L = 3.74	HMTN = 6812.	R = .0555	B/BFO = 9.3845	EQPA = 19.05					
PA/EGY = 5.5-A.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0150 .016	352-5 35-4 .0279 56-4 .1790 .012 91.7 .1005 56-4								
30 .0840 .034	313-5 31-4 .0937 .012 .6740 .022 100.6 .3894 .012								
" .9644 .215 .0475 .034	.6248 .055 5.013 .118 602.4 .3304 .065								
L = 3.73	HMTN = 4857.	R = .0806	B/BFO = 13.4760	EQPA = 15.31					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0482 .034	.0166 68-4 .1160 .013 52.8 .0653 70-6								
30 .0997 .050 .0226 .016 494-9 49-4 .0579 .012 .6790 .028 62.2 .3890 .016									
0 .5582 .211 .079 .056 .0169 .017 .6957 .075 5.211 .142 364.9 .3.046 .030									
L = 3.72	HMTN = 3543.	R = .1138	B/BFO = 18.8692	EQPA = 13.30					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0123 .87-4 .11.0 .07745 .50-6									
30 .0368 .021 5.733 .162 14.0 .3.032 .092									
0 3.185 1.06 .3629 .115 21.25 .675 79.2 11.41 .333									
L = 3.66	HMTN = 933.	R = .2634	B/BFO = 41.4306	EQPA = 8.94					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0206 .127 1.6 .0729 .042									
30 .7257 .375 9.8 .3018 .175									
L = 3.72	HMTN = 748.	R = .2715	B/BFO = 44.9561	EQPA = 8.58					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0204 .029 7.4 .0114 .011									
30 .1451 .145 11.8 .0651 .065									
L = 3.77	HMTN = 658.	R = .2857	B/BFO = 49.2065	EQPA = 7.20					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0368 .026 .0315 .018 5.6 .0347 .016									
30 .1873 .137 .3519 .176 .3746 .172 32.0 .3120 .087									
L = 3.74	HMTN = 537.	R = .3023	B/BFO = 50.9519	EQPA = 8.05					
PA/EGY = 5.5-A.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0368 .037 3.4 .0114 .011									
30 .0519 .061 4.6 .0405 .019									
0 .4504 .150 29.2 .2367 .079									
L = 3.75	HMTN = 462.	R = .3090	B/BFO = 52.5429	EQPA = 7.93					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0368 .026 4.6									
30 .1451 .145 14.2									
L = 3.74	HMTN = 368.	R = .3211	B/BFO = 54.2075	EQPA = 7.31					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0368 .026 4.2 .0195 .013									
30 .1814 .105 25.8 .1922 .053									
L = 3.80	HMTN = 239.	R = .3394	B/BFO = 58.0085	EQPA = 7.42					
PA/EGY = 5.5-B.	R.-13. 13.-25. 25.-50. 50.-100.	T 5.5-100.							
7 .0147 .015 3.6 .0108 .011									
30 .154									

APPENDIX D

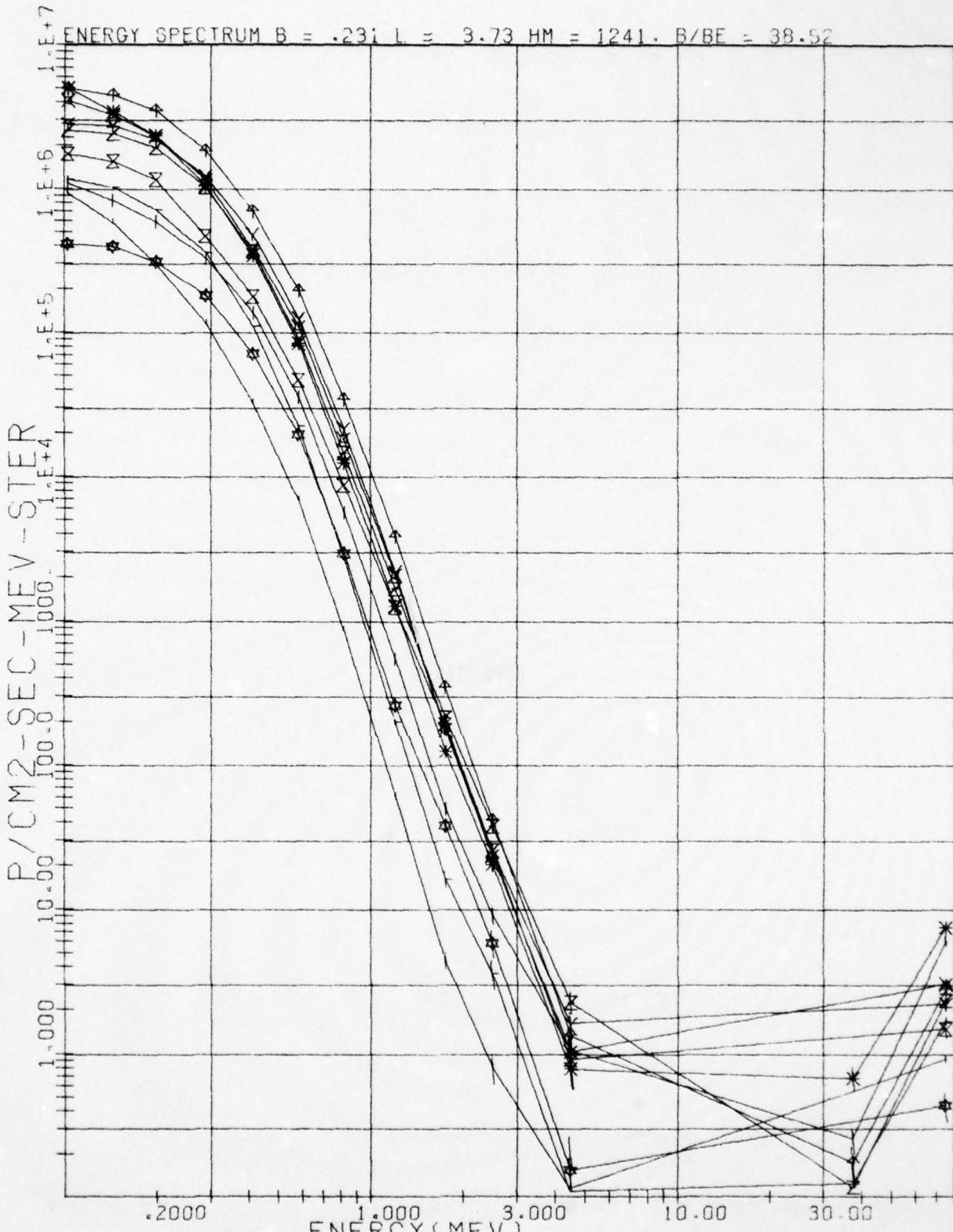
000.0 000.1 000.2 000.3 000.4 000.5 000.6
CINCINNATI, OHIO
AT 900 FT. ABV. TEL. 4-17902 R-62
12.45 - 80% STEEP - 100% DRY - 100% WET







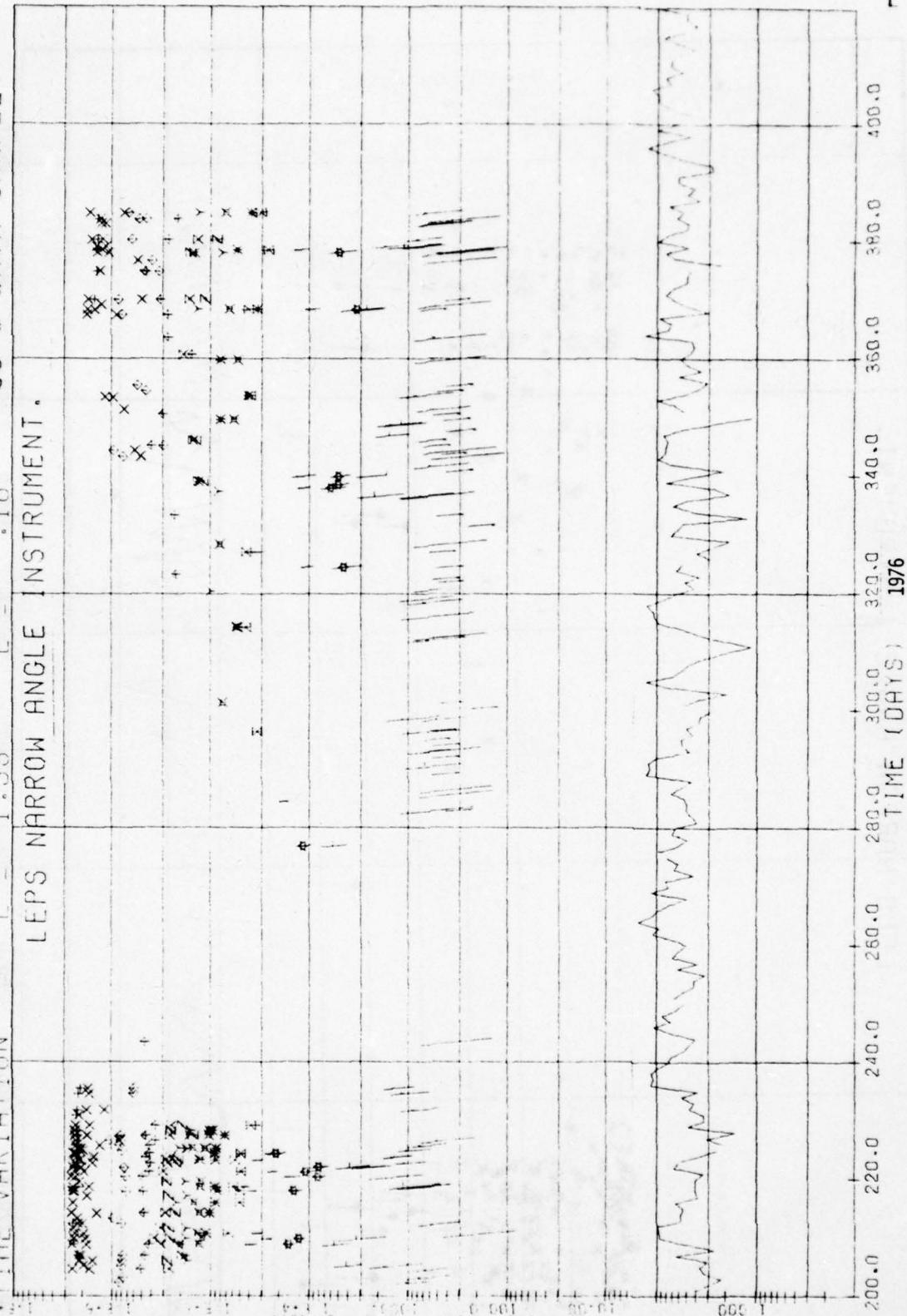
S3-2 DATA SAMPLE. TAPE NO. 2 FROM JAN 76
 S3-2 SORTED DATA 11/30/77 PLOT NO. 7

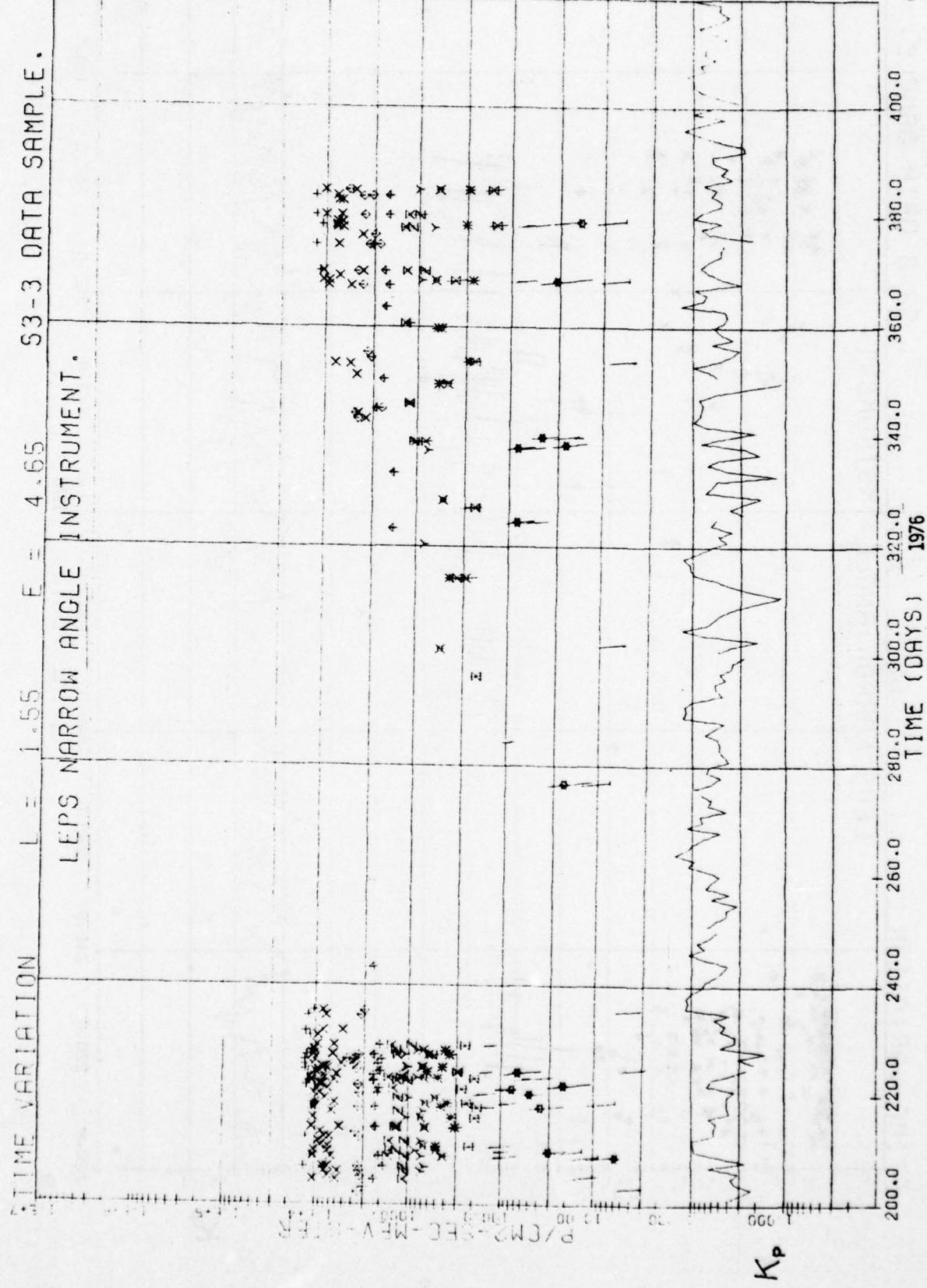


S3-2 DATA SAMPLE, TAPE NO. 3 FROM JAN 76.
S3-2 SORTED DATA 11/30/77 PLOT NO. 7

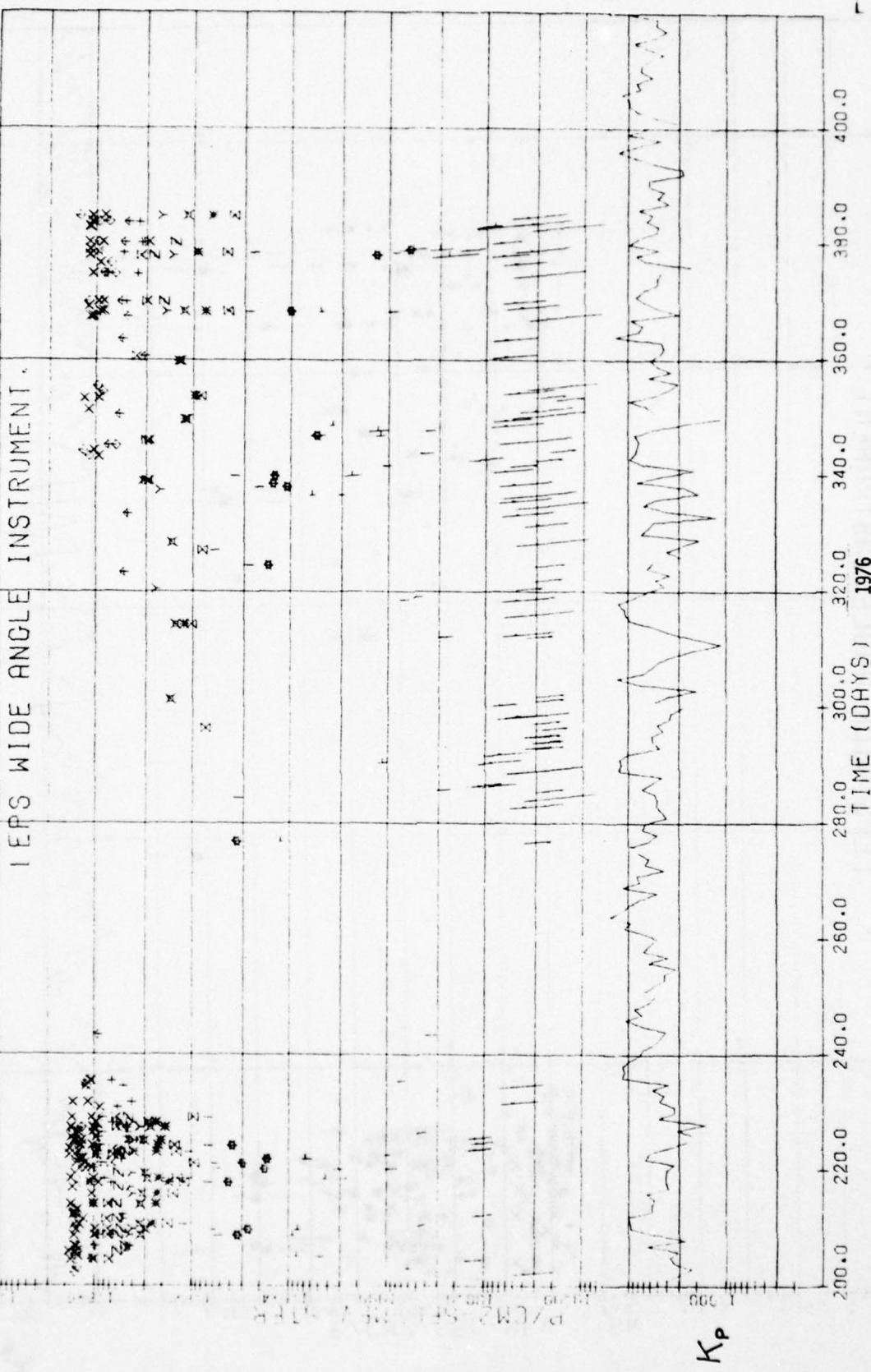
APPENDIX E

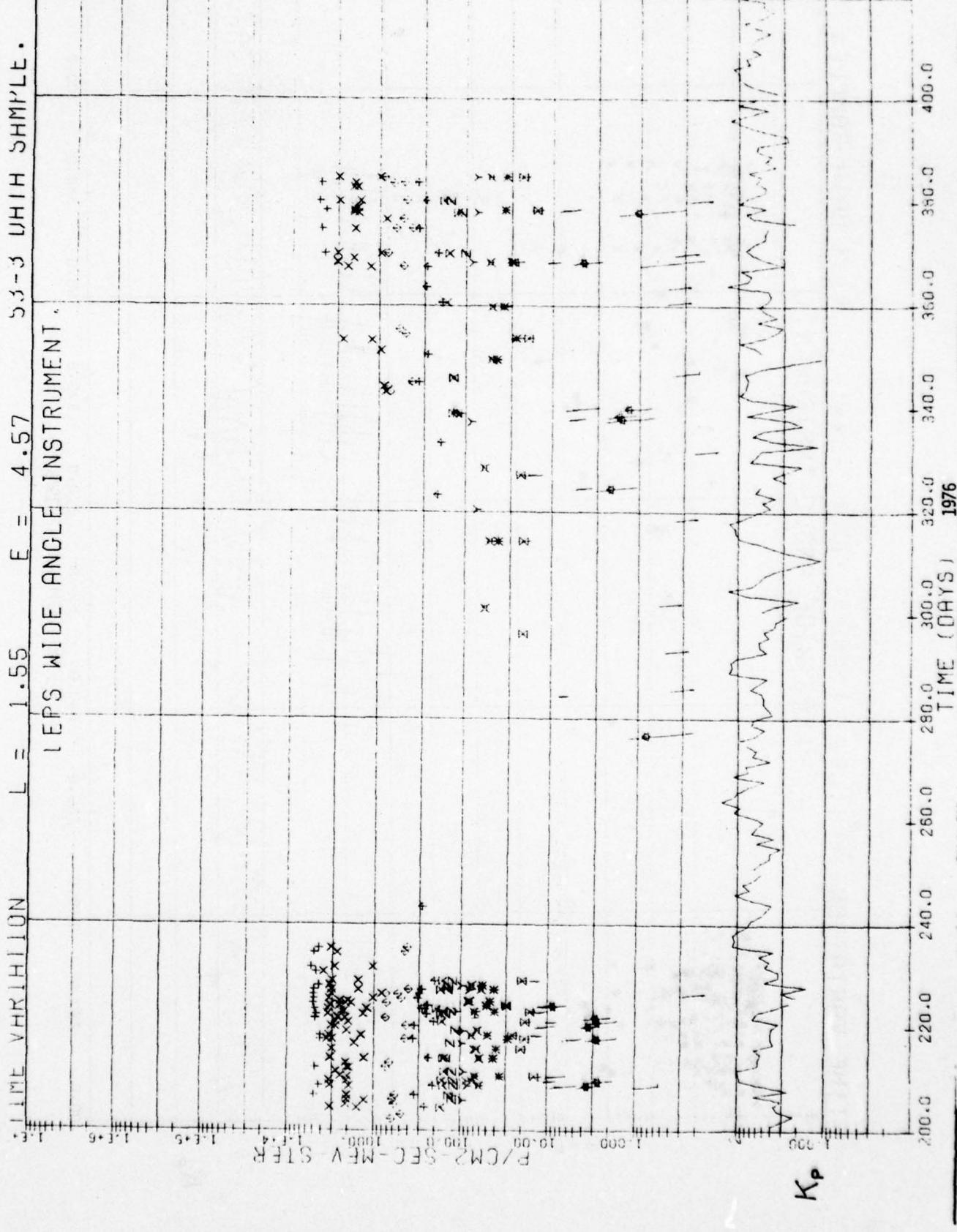
TIME VARIATION $L = 1.55$ $E = .18$ S3-3 DATA SAMPLE.





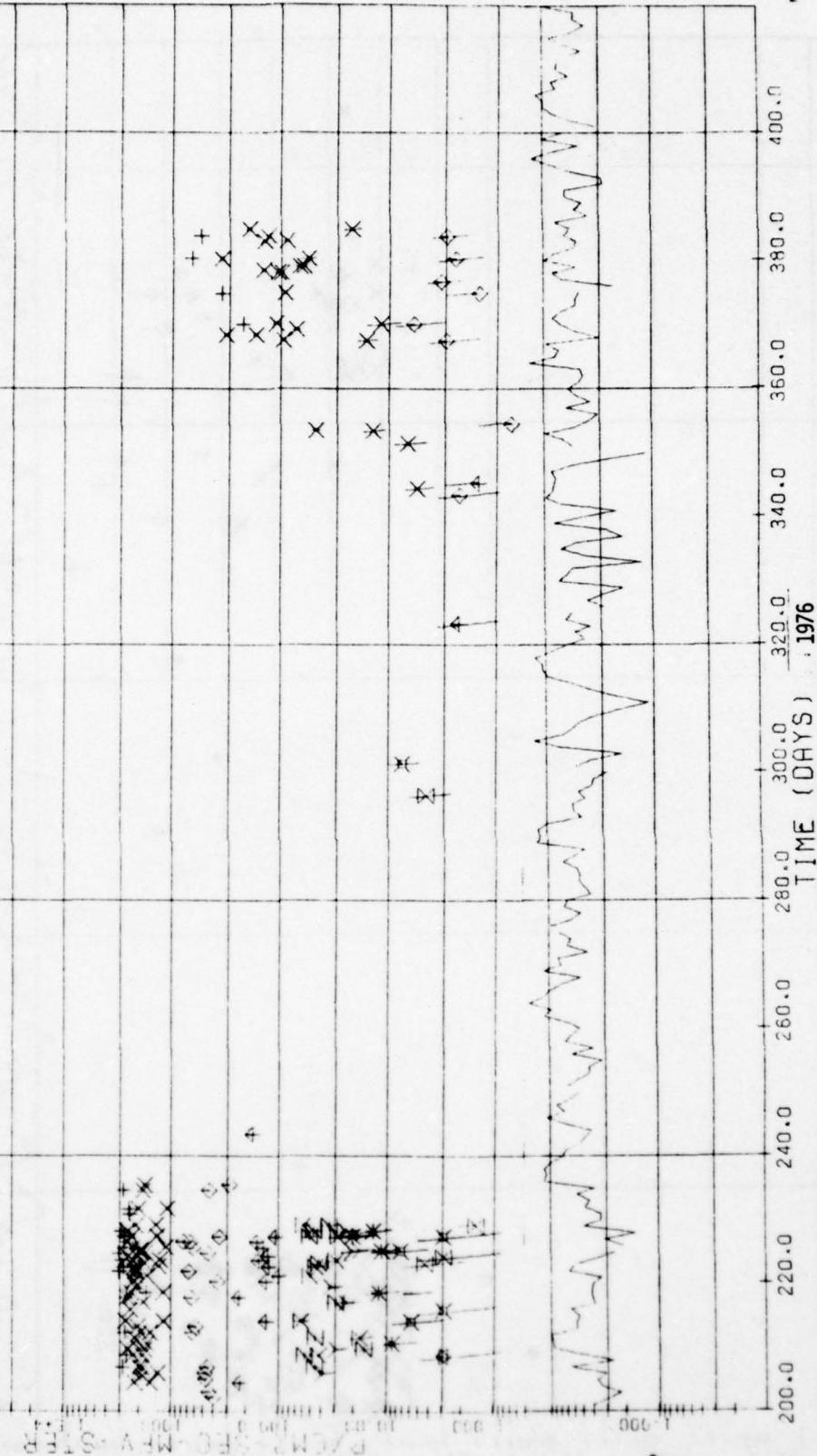
TIME VARIATION L = 1.55 E = .44 G3-3 DATA SAMPLE.



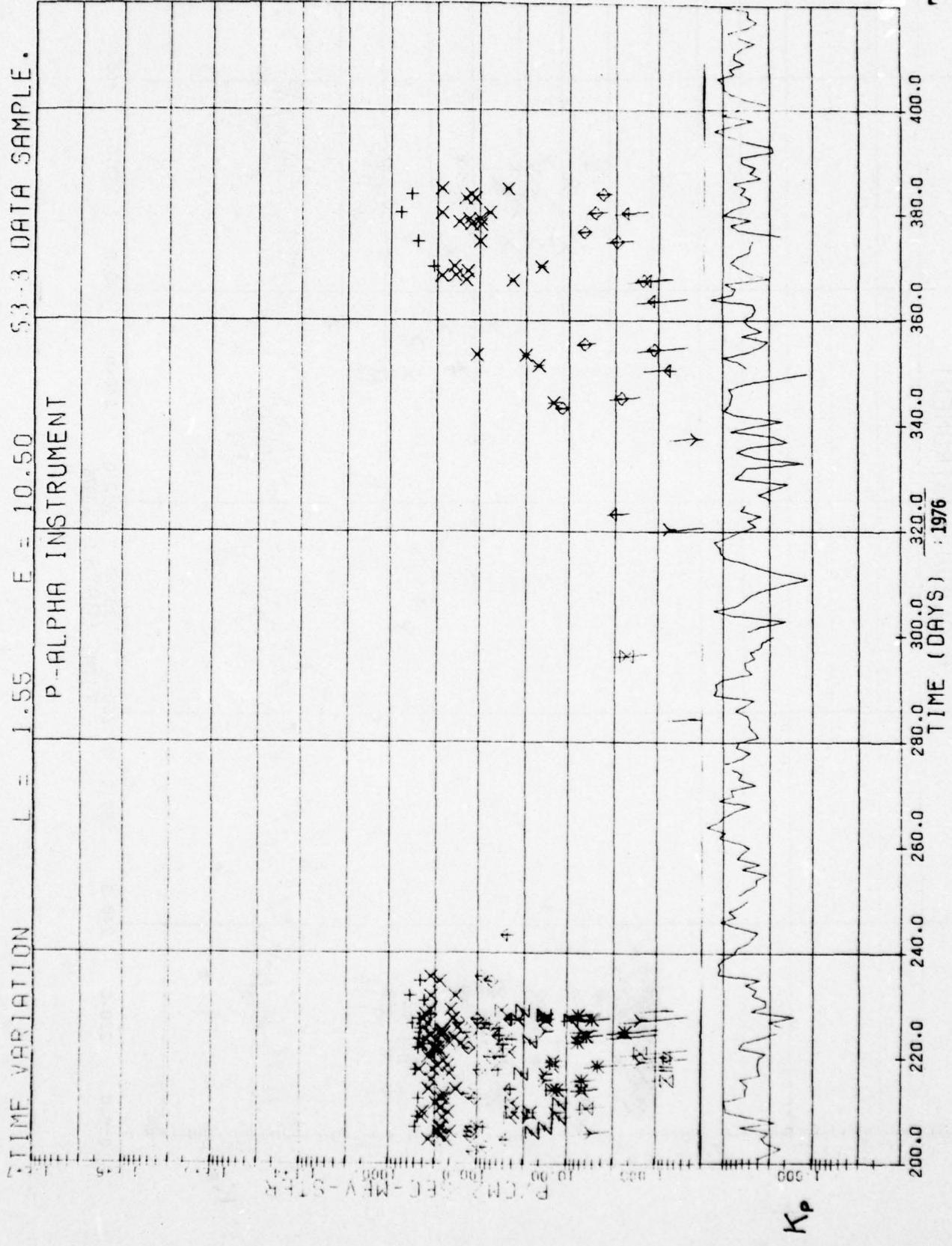


TIME VARIATION $L = 1.55$ $E = 6.75$ 53-3 DATA SAMPLE.

P-ALPHA INSTRUMENT

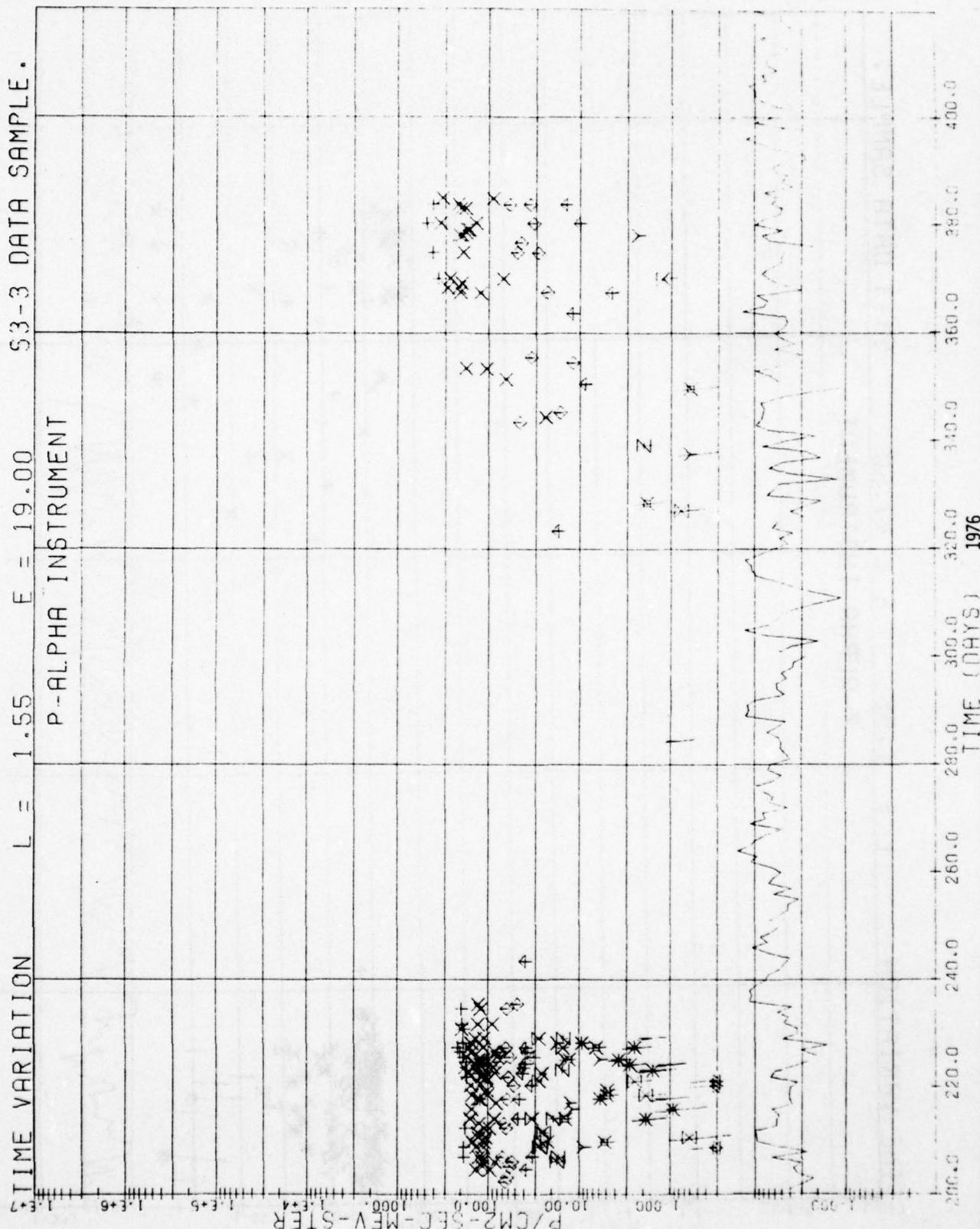


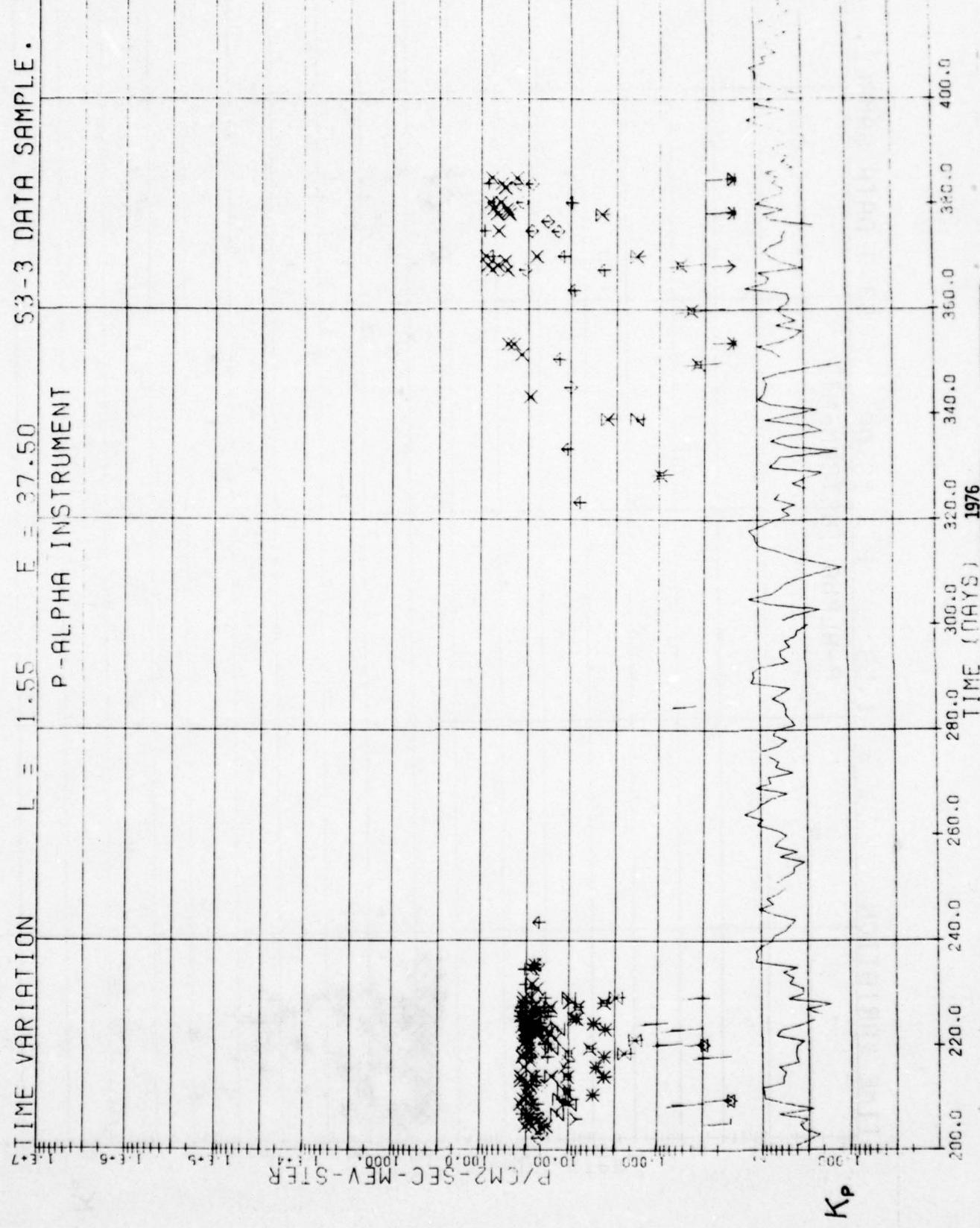
K_p



TIME VARIATION L = 1.55 E = 19.00 S3-3 DATA SAMPLE.

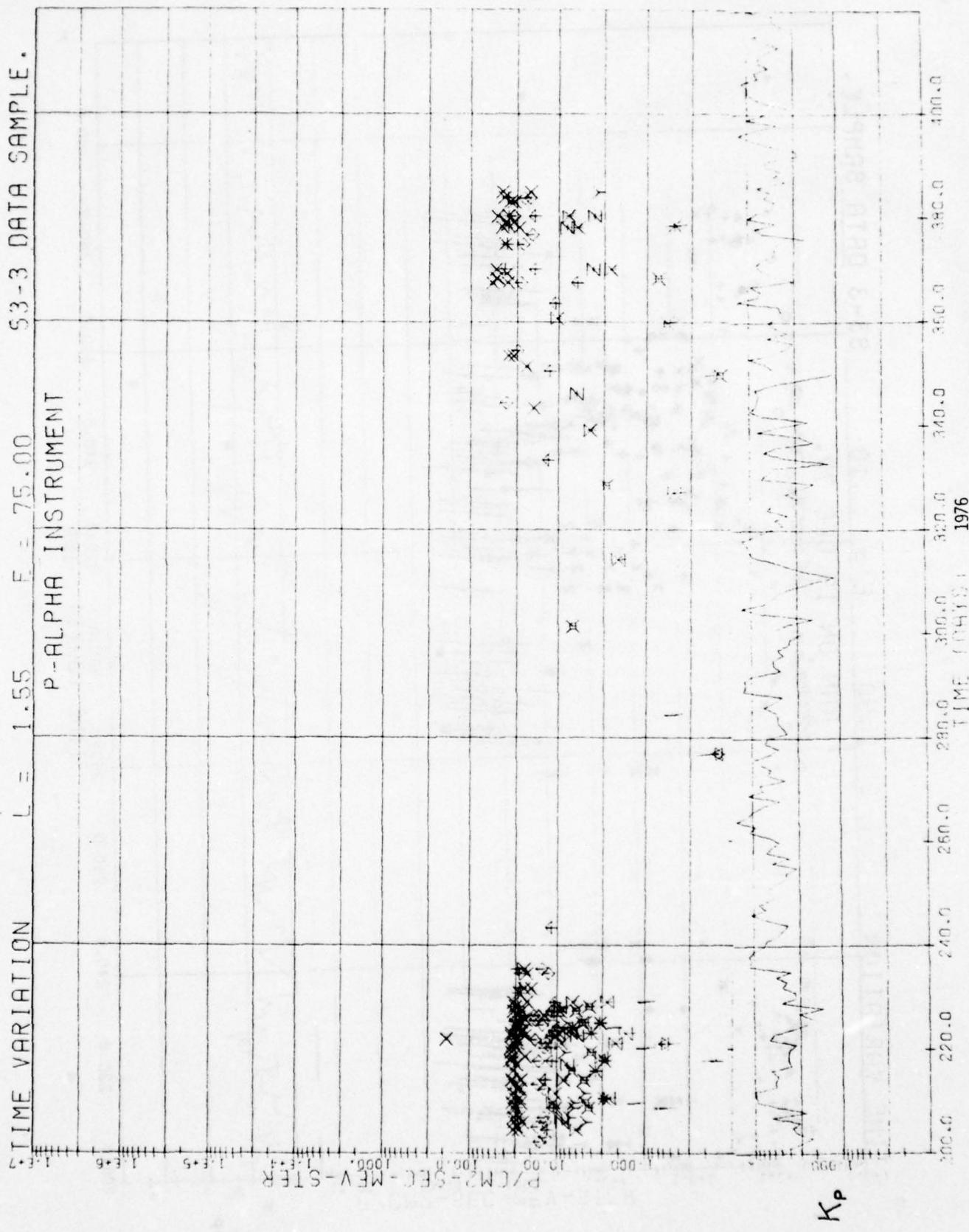
P-ALPHA INSTRUMENT

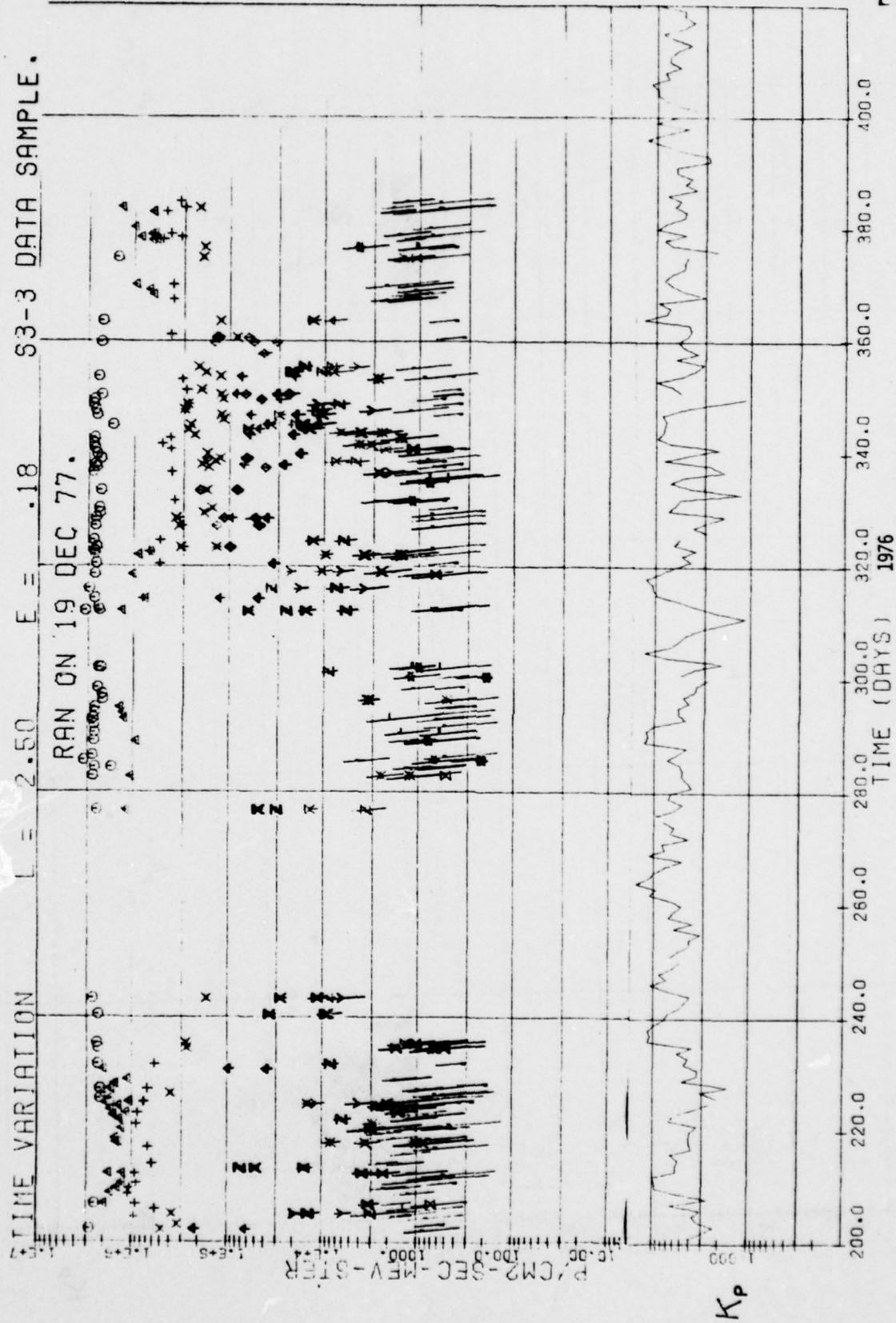


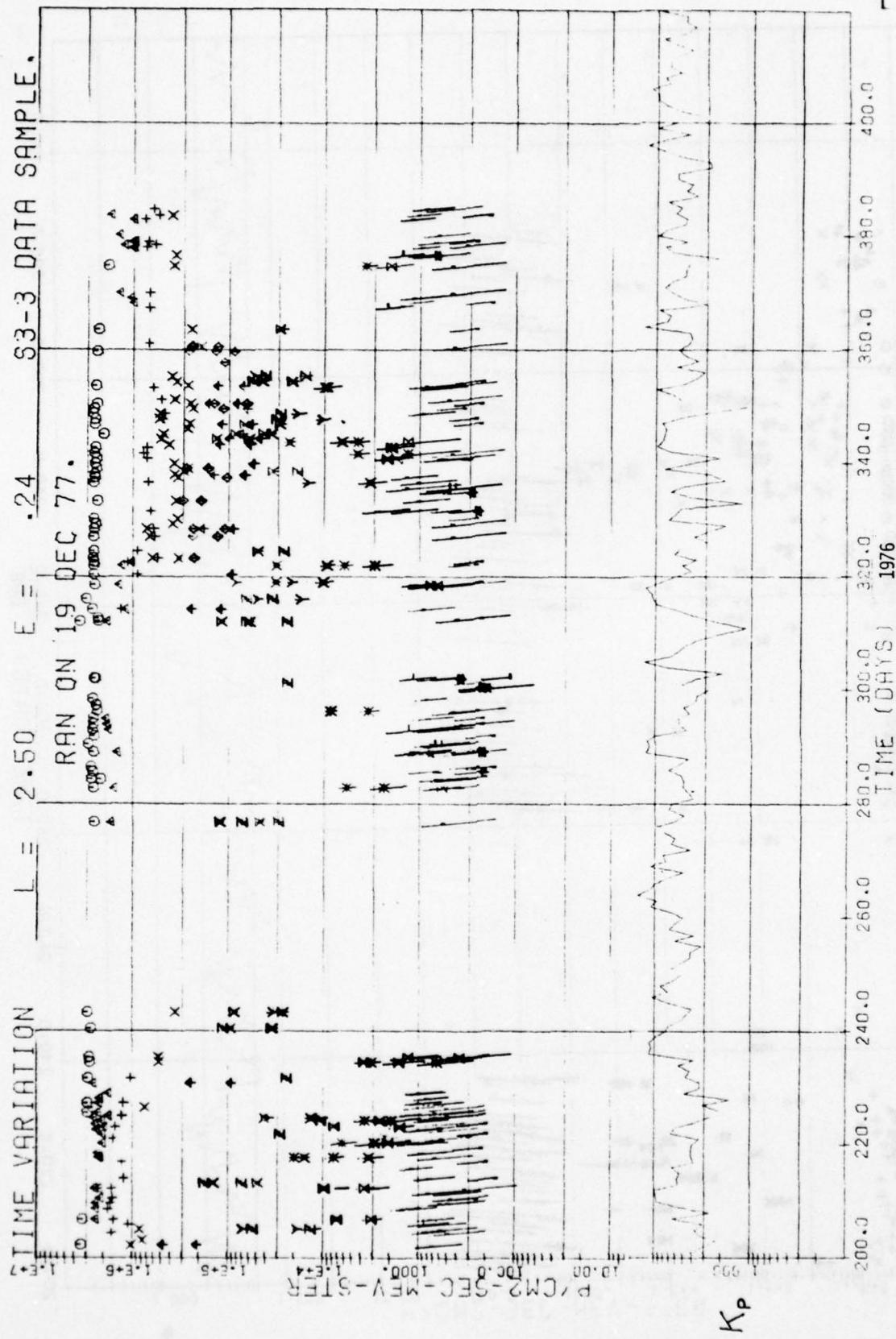


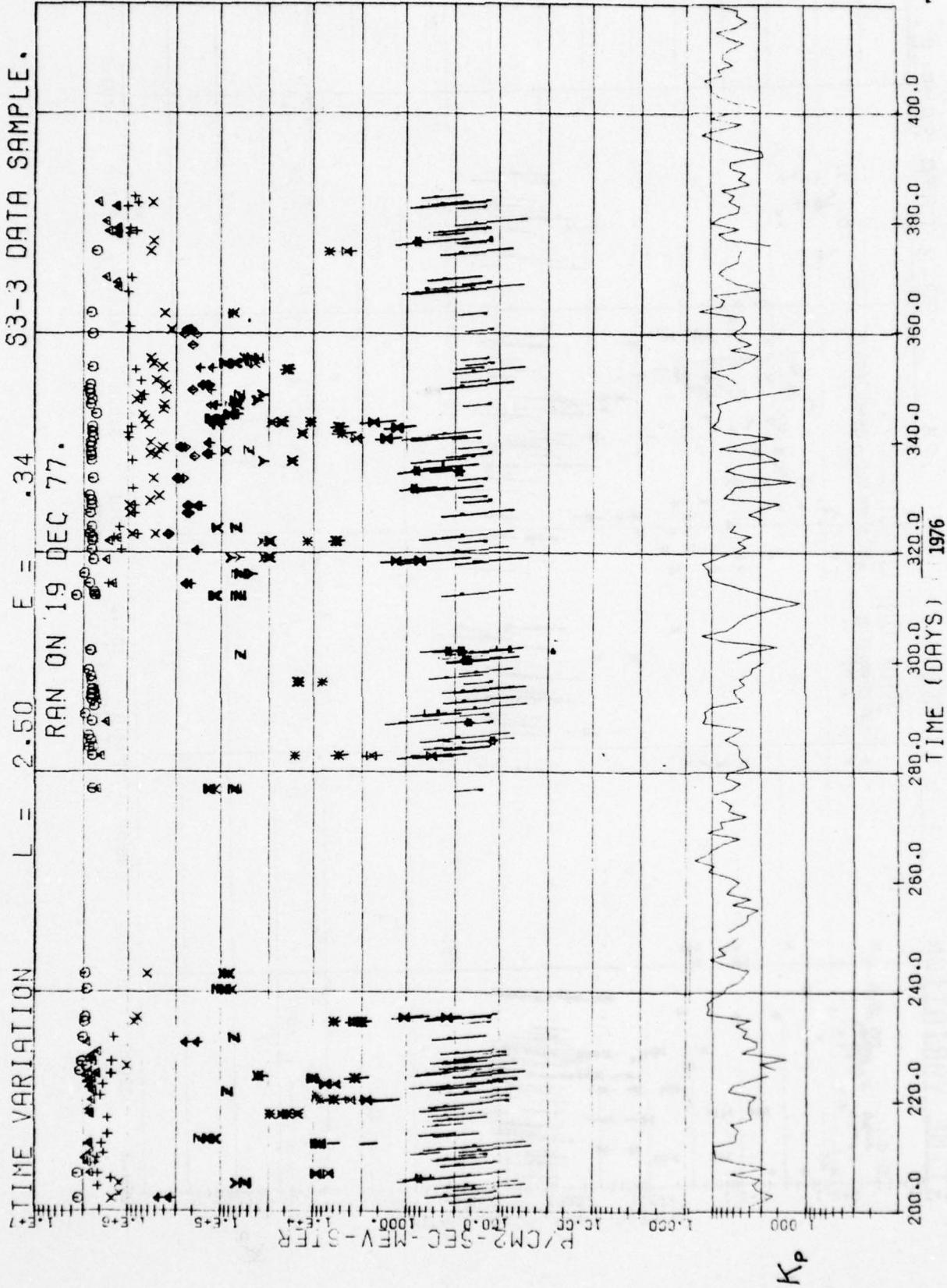
TIME VARIATION $L = 1.55$ $F = 75.00$ 53-3 DATA SAMPLE.

P-ALPHA INSTRUMENT









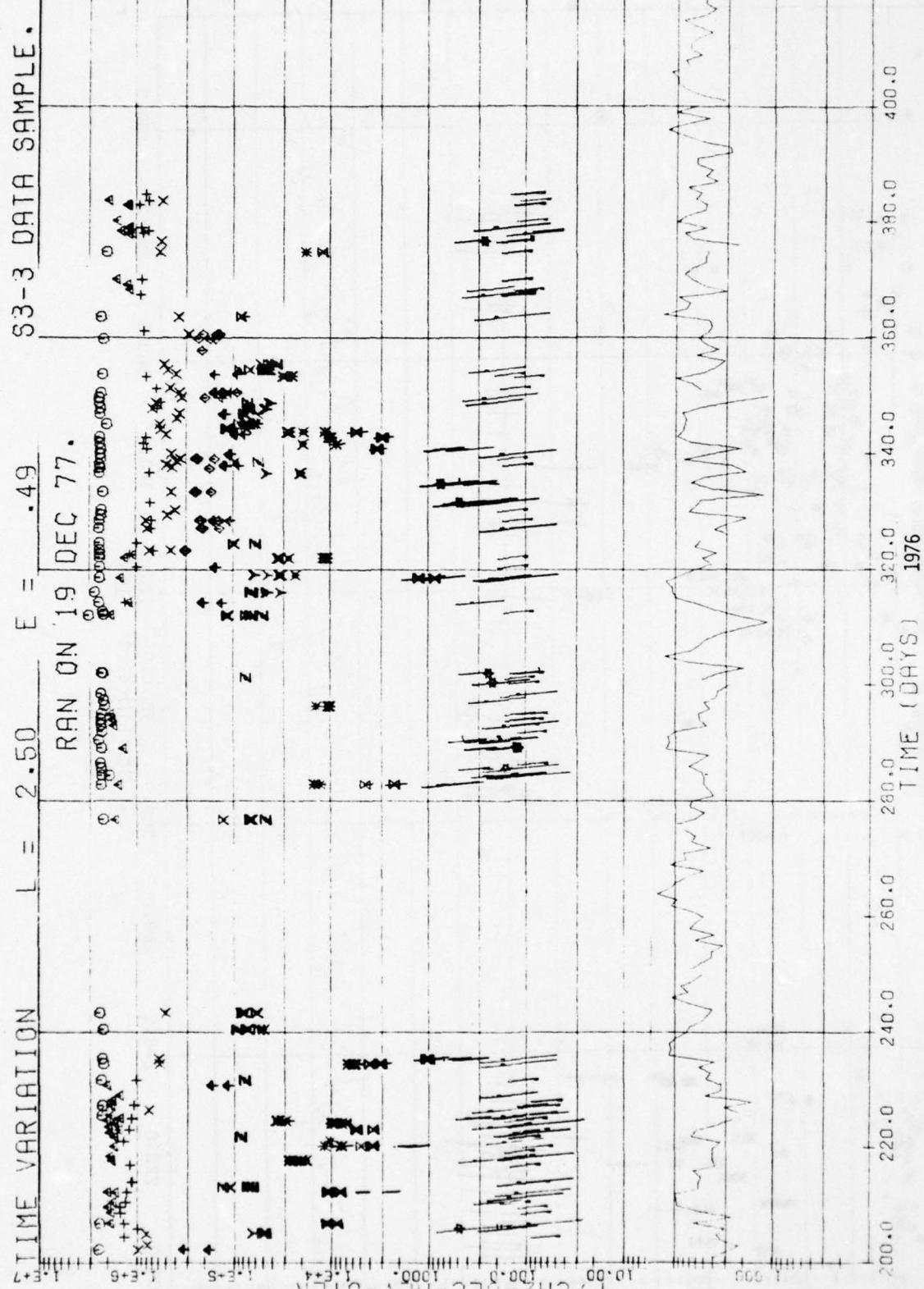
TIME VARIATION

$L = 2.50$

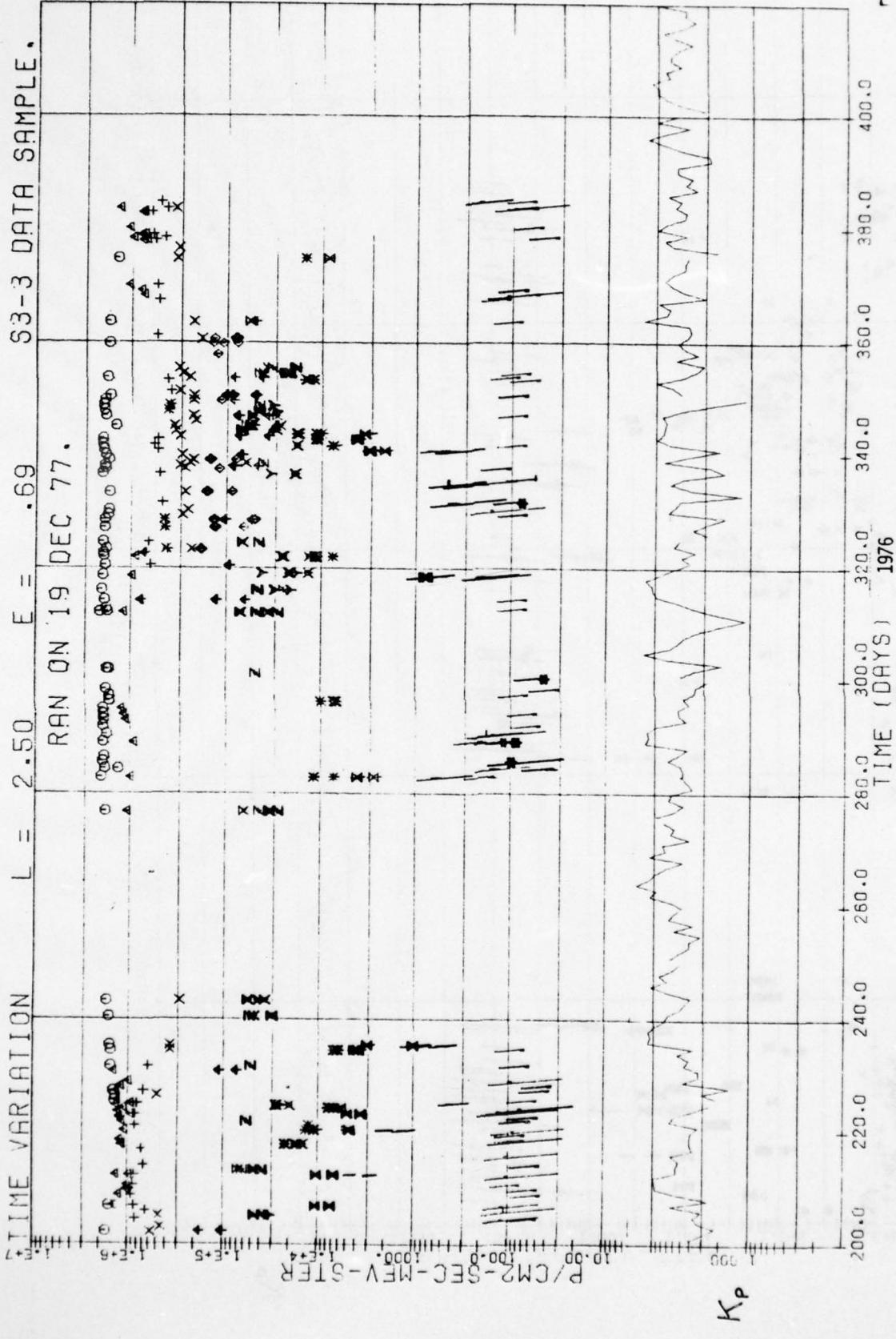
S3-3 DATA SAMPLE.

RAN ON 19 DEC 77.

$E = .49$

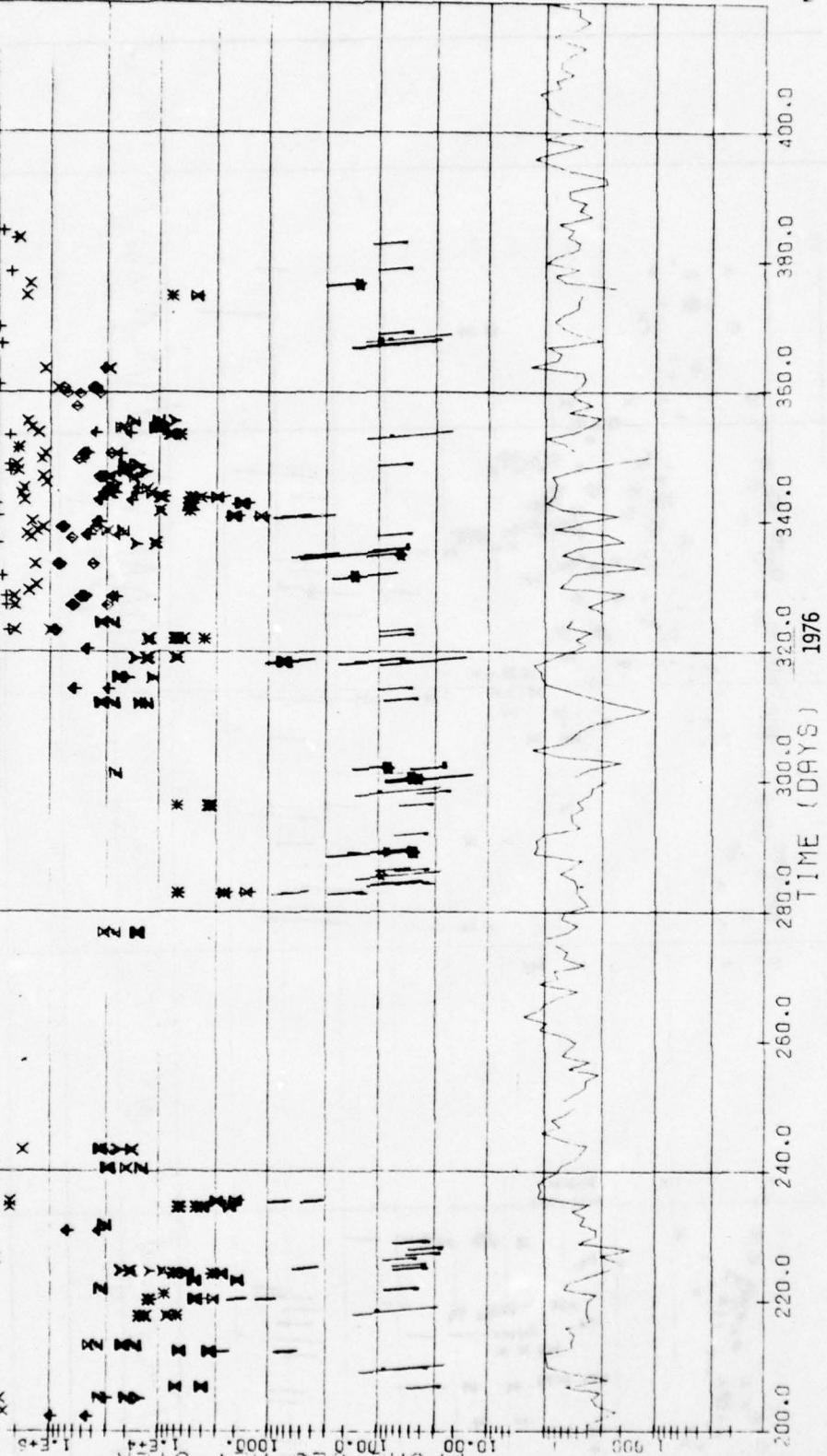
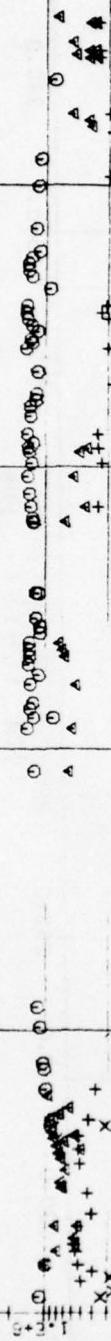


K_p



TIME VARIATION L = 2.50 E = .96 S3-3 DATA SAMPLE.

RAN ON 19 DEC 77.

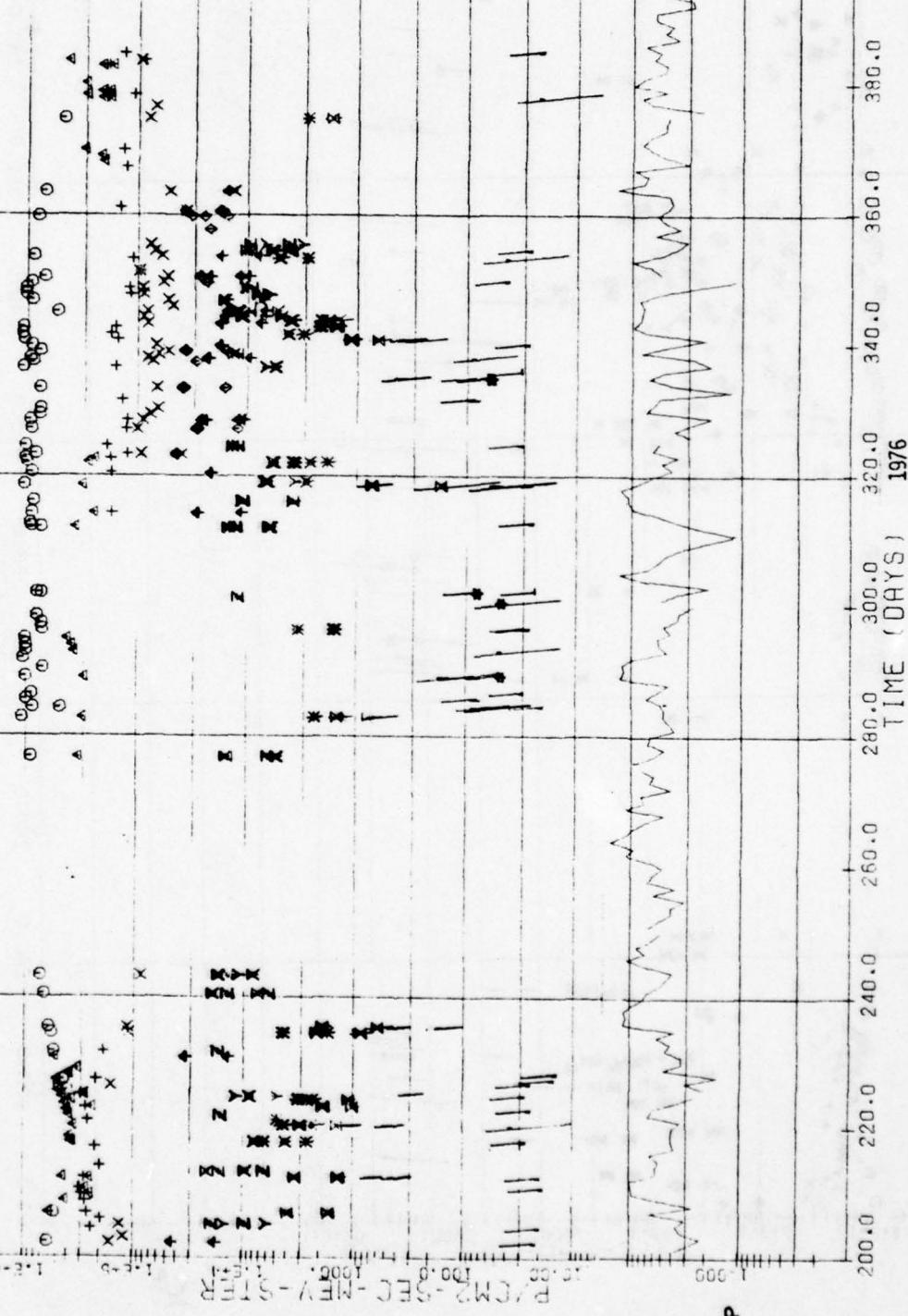


K_p

TIME VARIATION

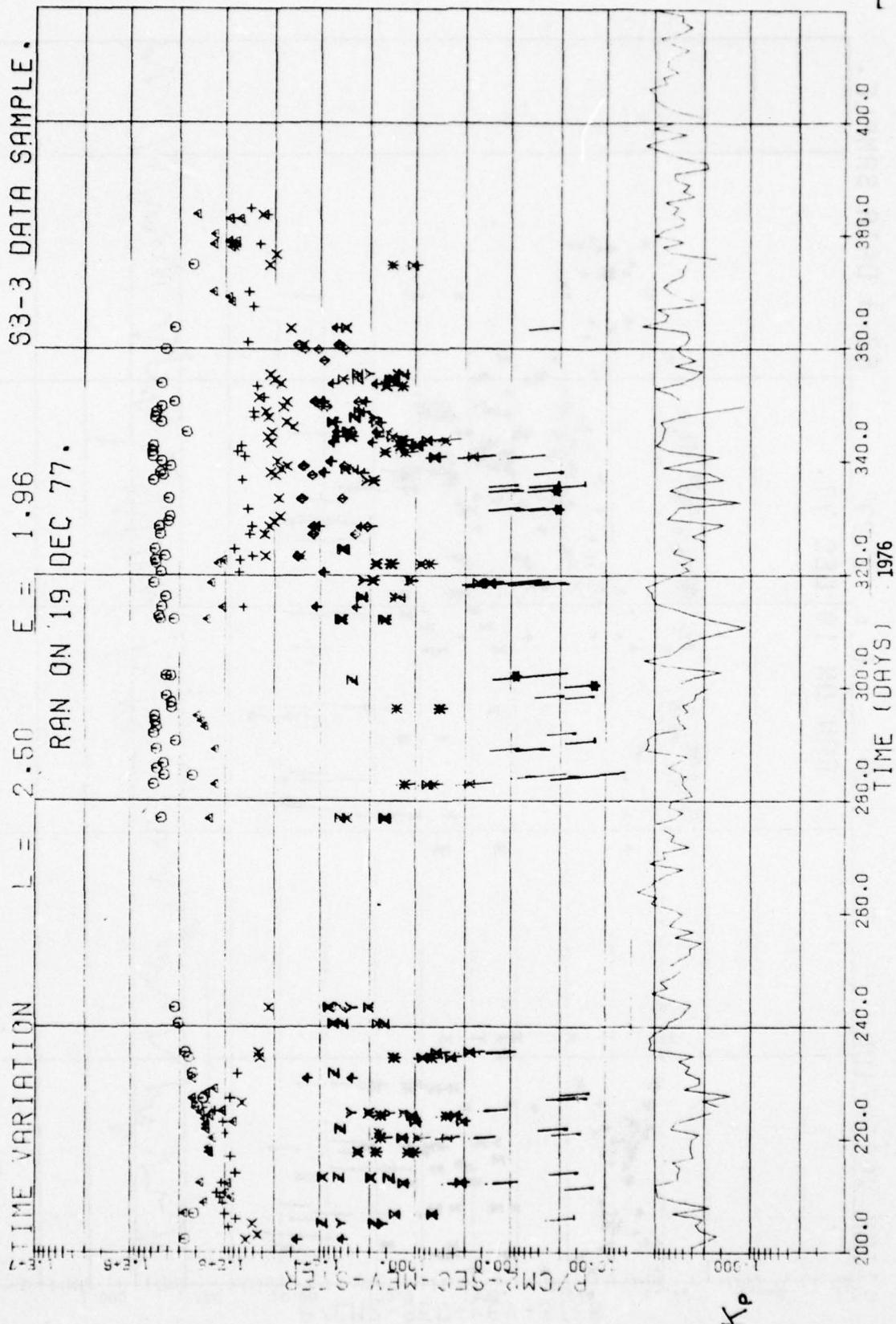
L = 2.50 E = 1.40
RAN ON 19 DEC 77.

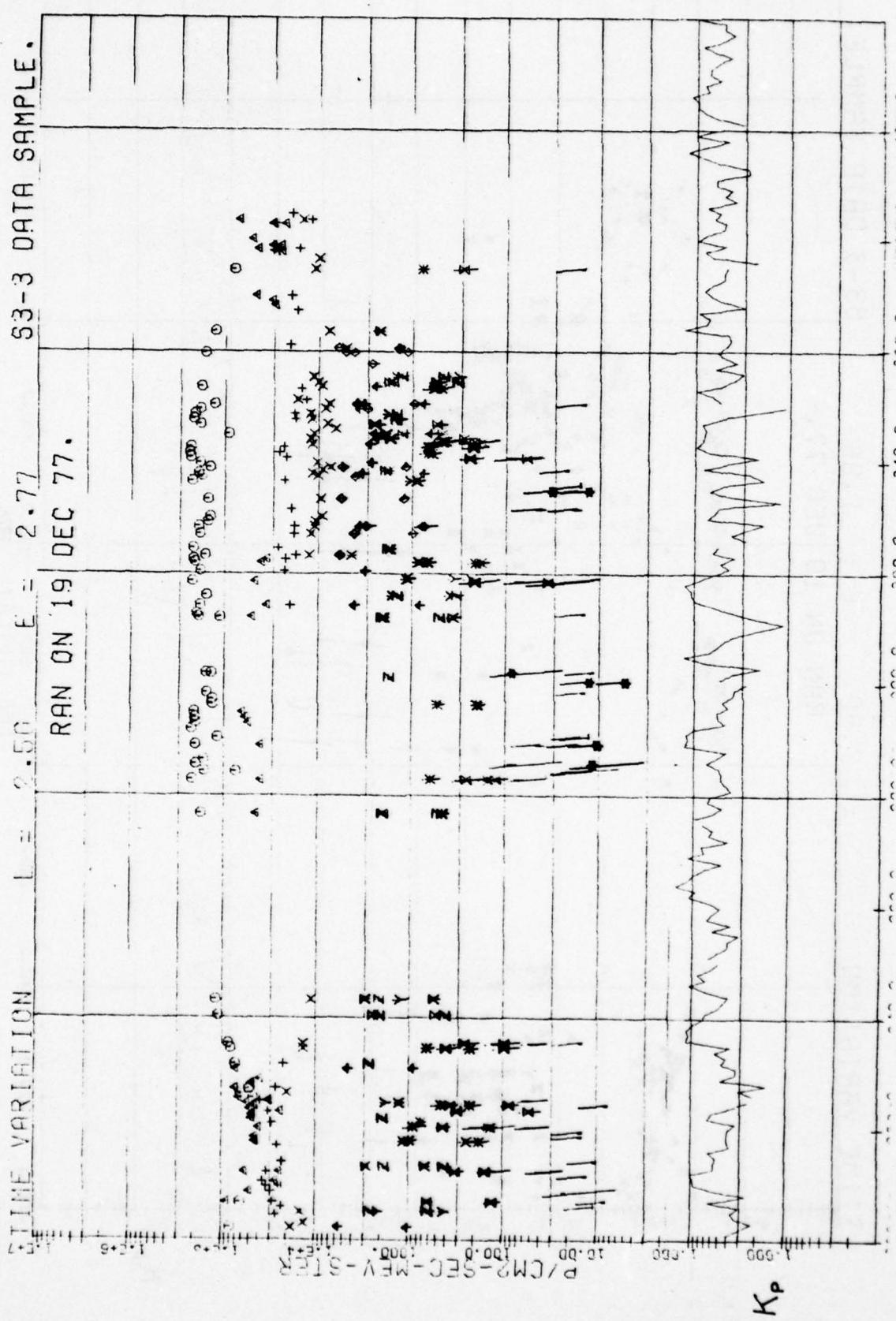
53-3 DATA SAMPLE.

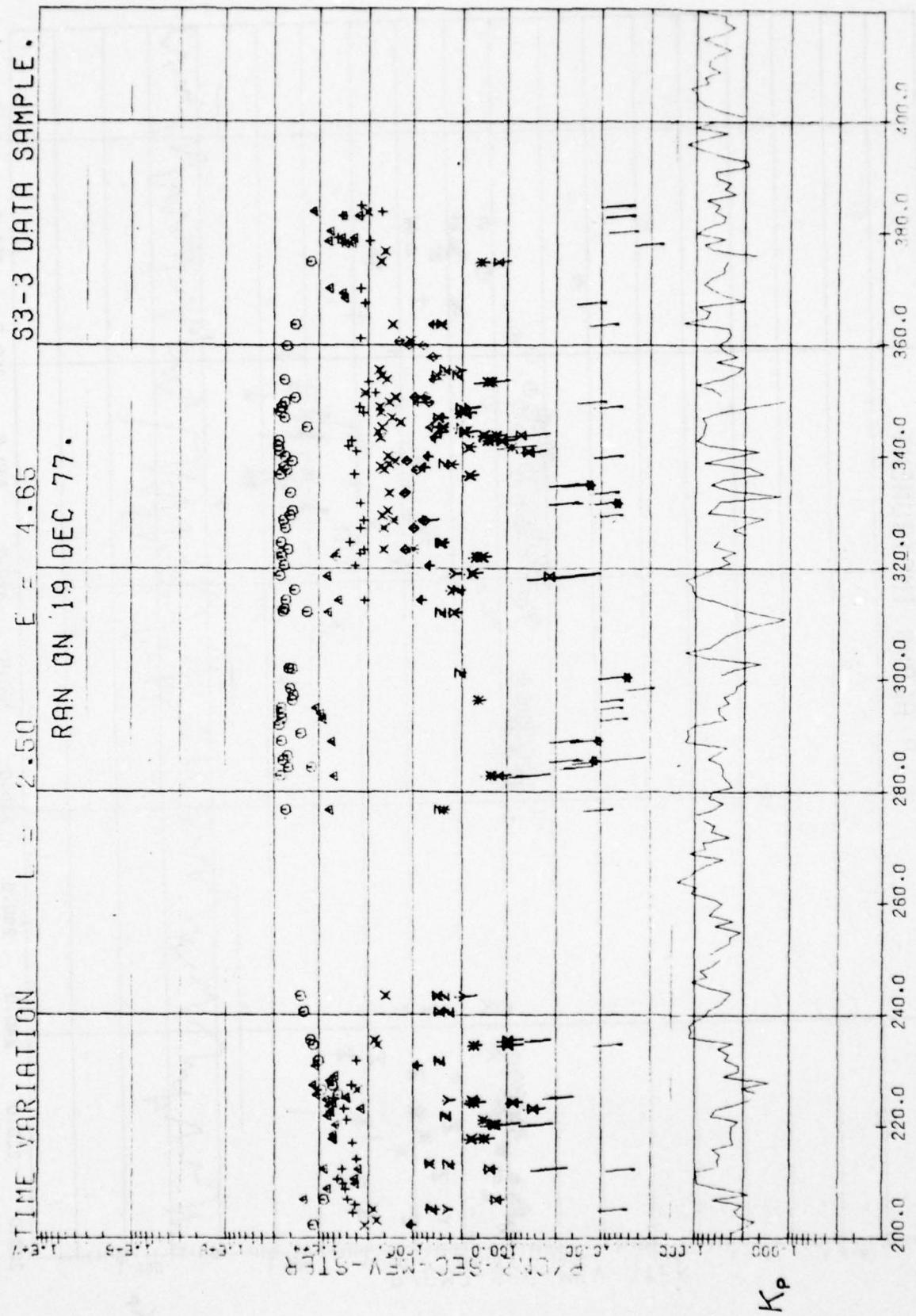


S3-3 DATA SAMPLE.

TIME VARIATION $L = 2.50$ $E = 1.96$
 RAN ON 19 DEC 77.

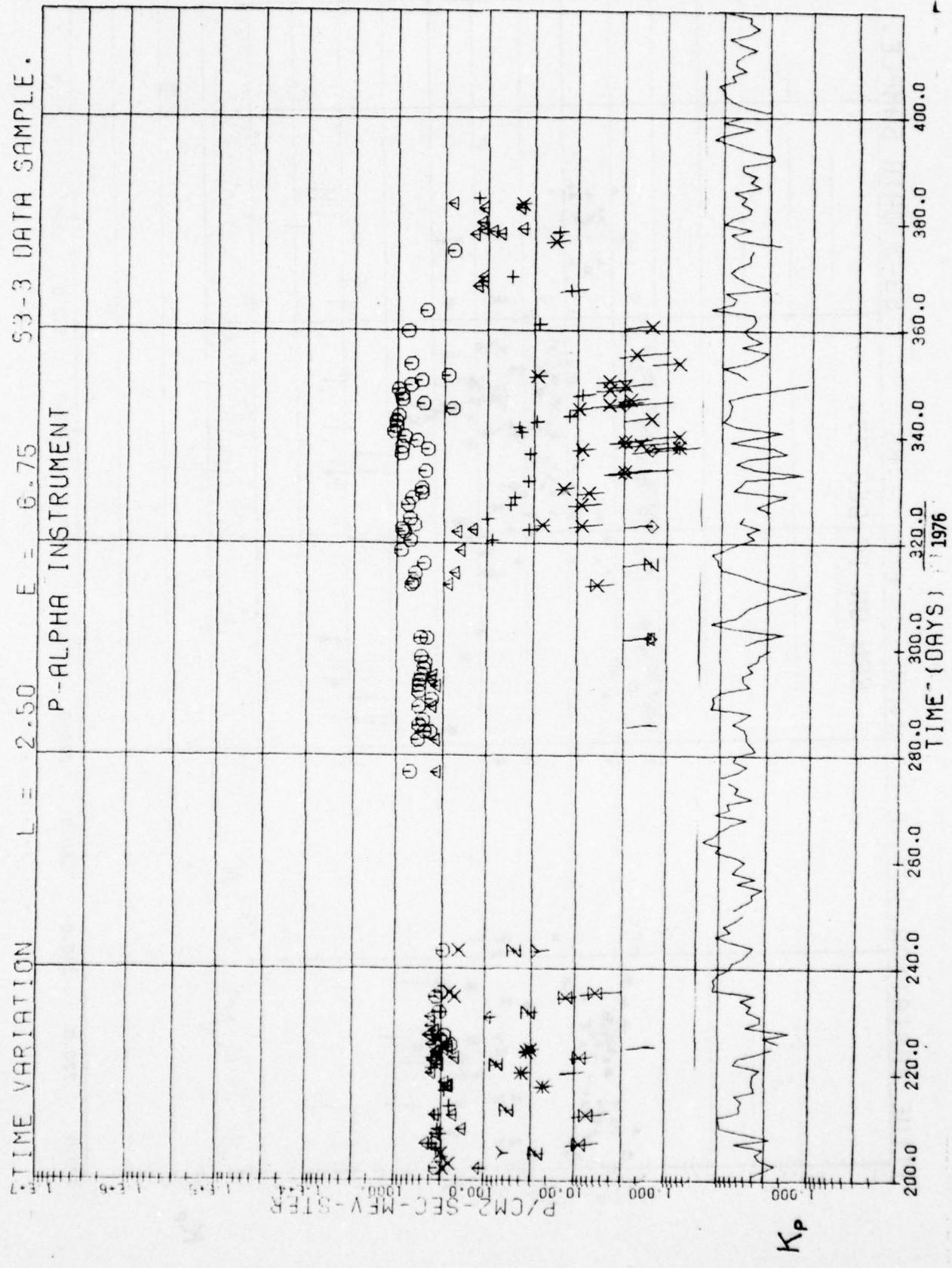






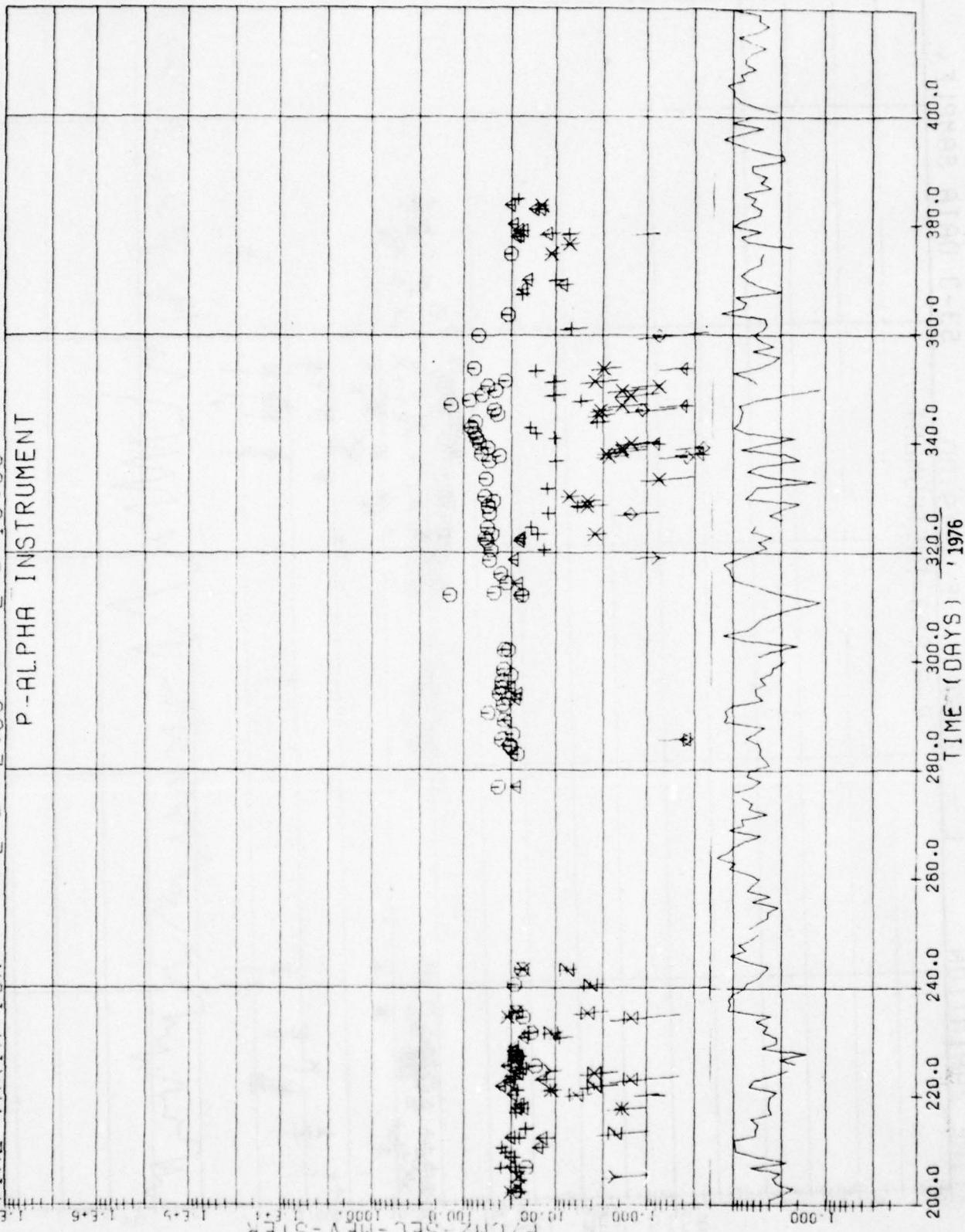
TIME VARIATION L = 2.50 E = 6.75 53-3 DATA SAMPLE.

P-ALPHA INSTRUMENT



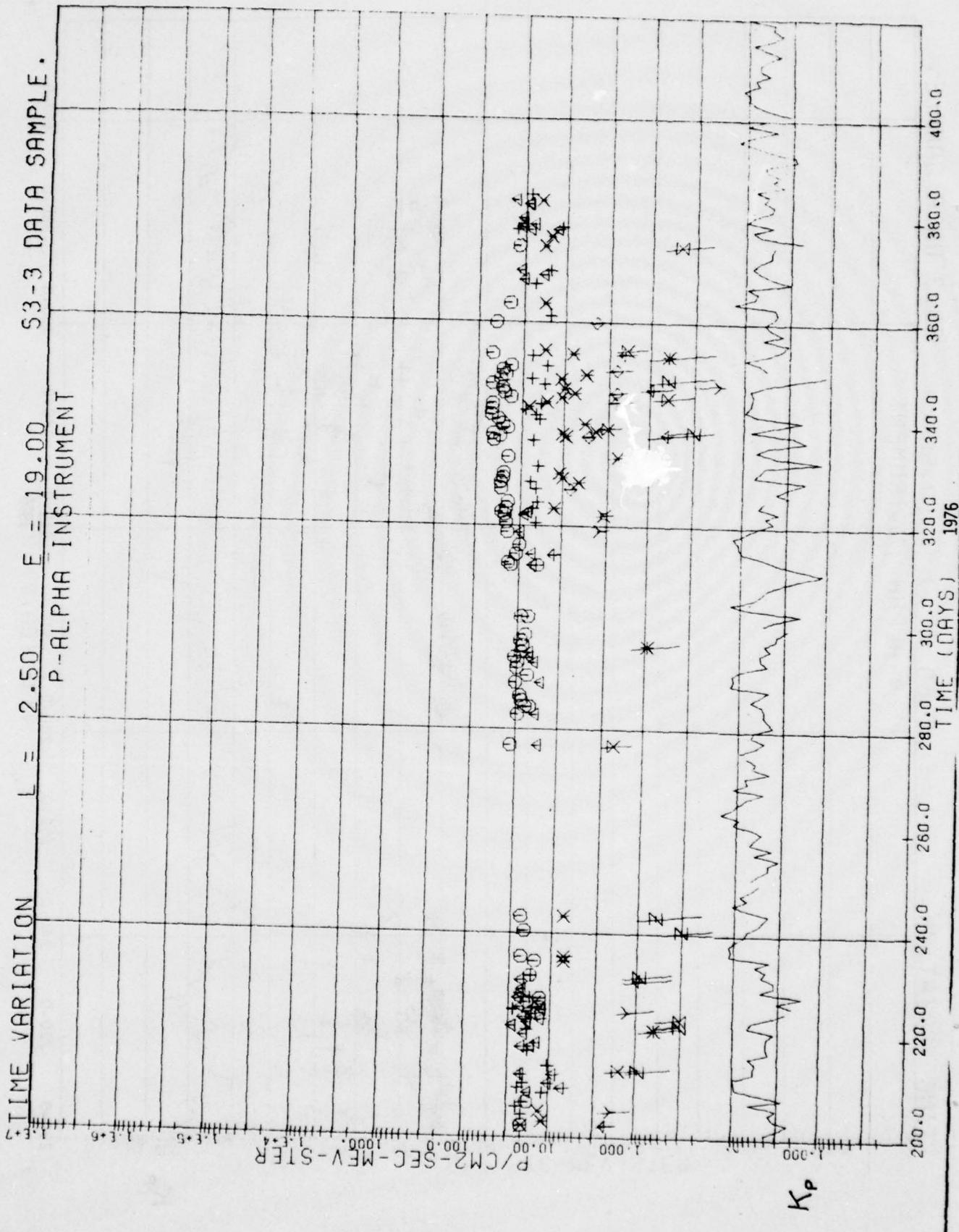
K_p

TIME VARIATION $L = 2.50$ $E = 10.50$ S3-3 DATA SAMPLE.



K_p

TIME VARIATION L = 2.50 E = 19.00 53-3 DATA SAMPLE.
P-ALPHA INSTRUMENT

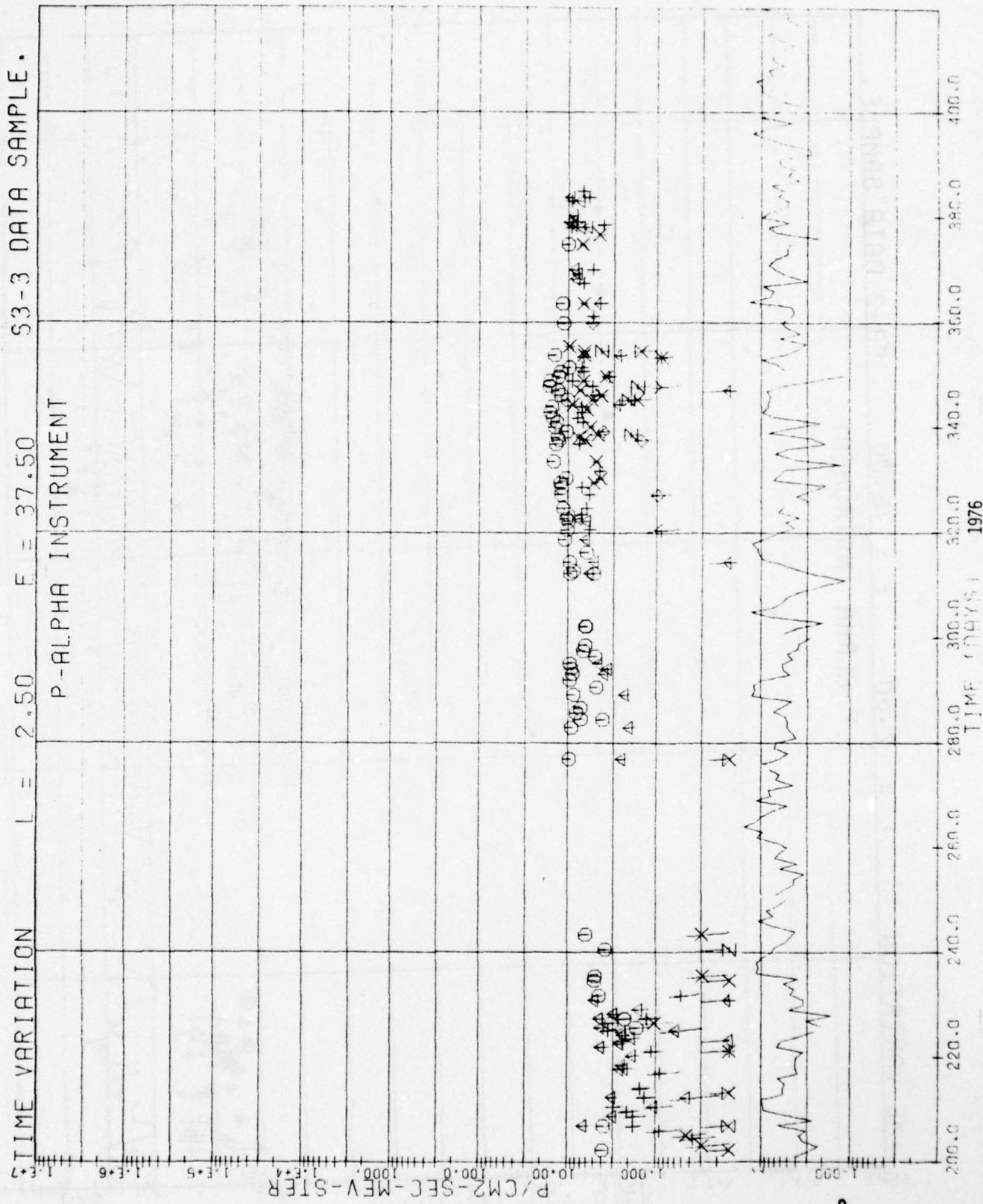


TIME VARIATION

37.50

P-BI-PH8 INSTRUMENT

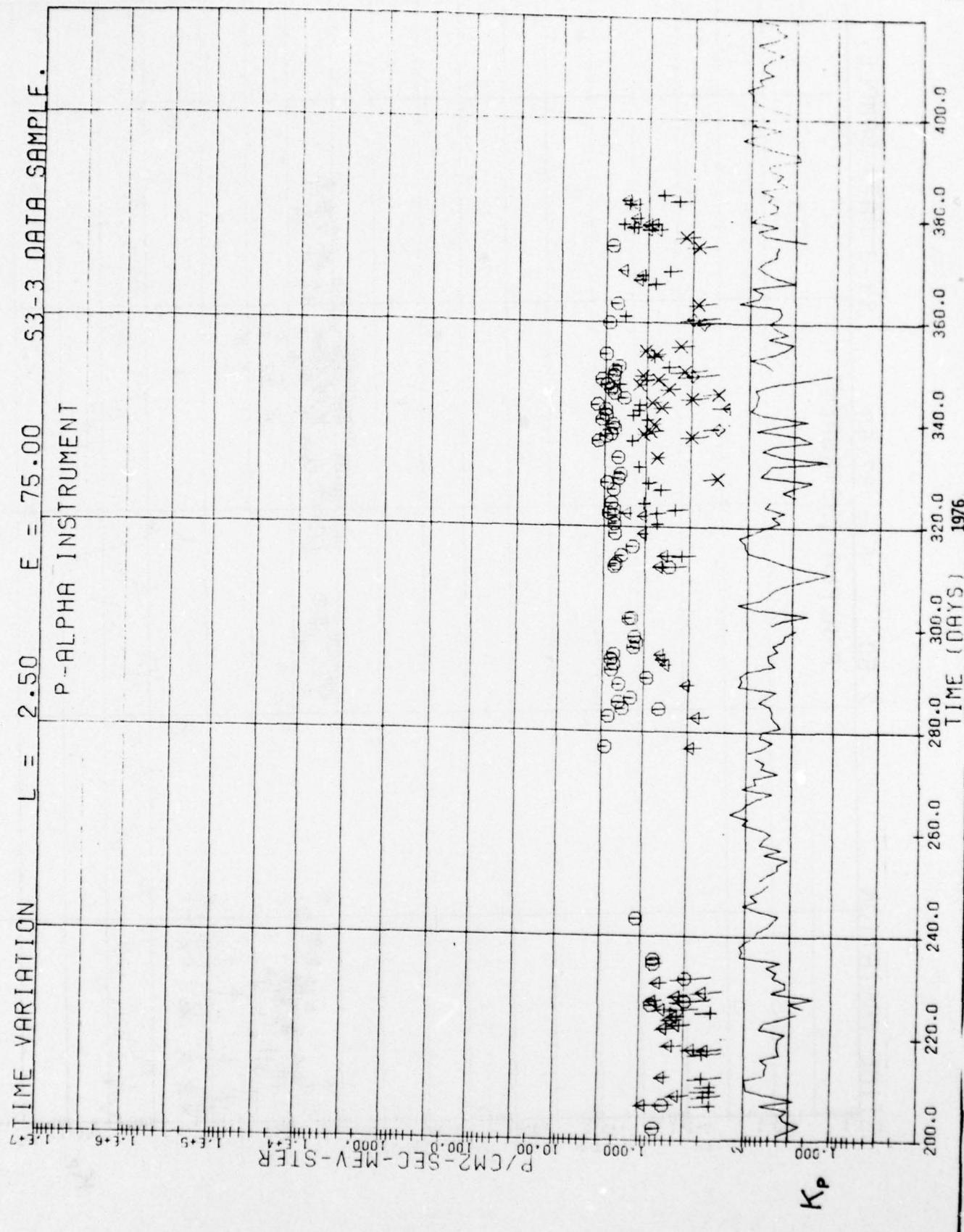
卷之三



K^ρ

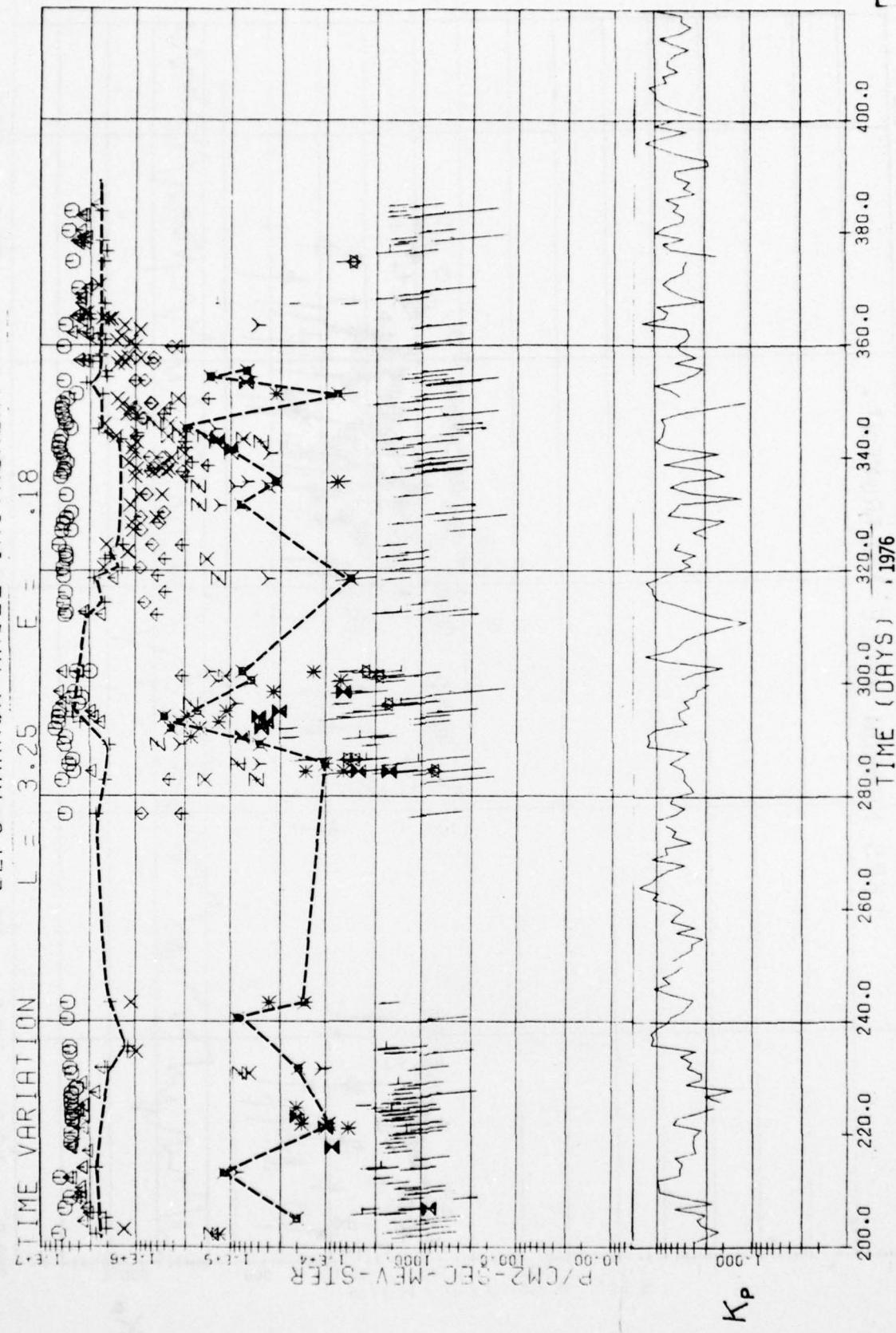
TIME VARIATION $L = 2.50$ $E = 75.00$ S3-3 DATA SAMPLE.

P-ALPHA INSTRUMENT



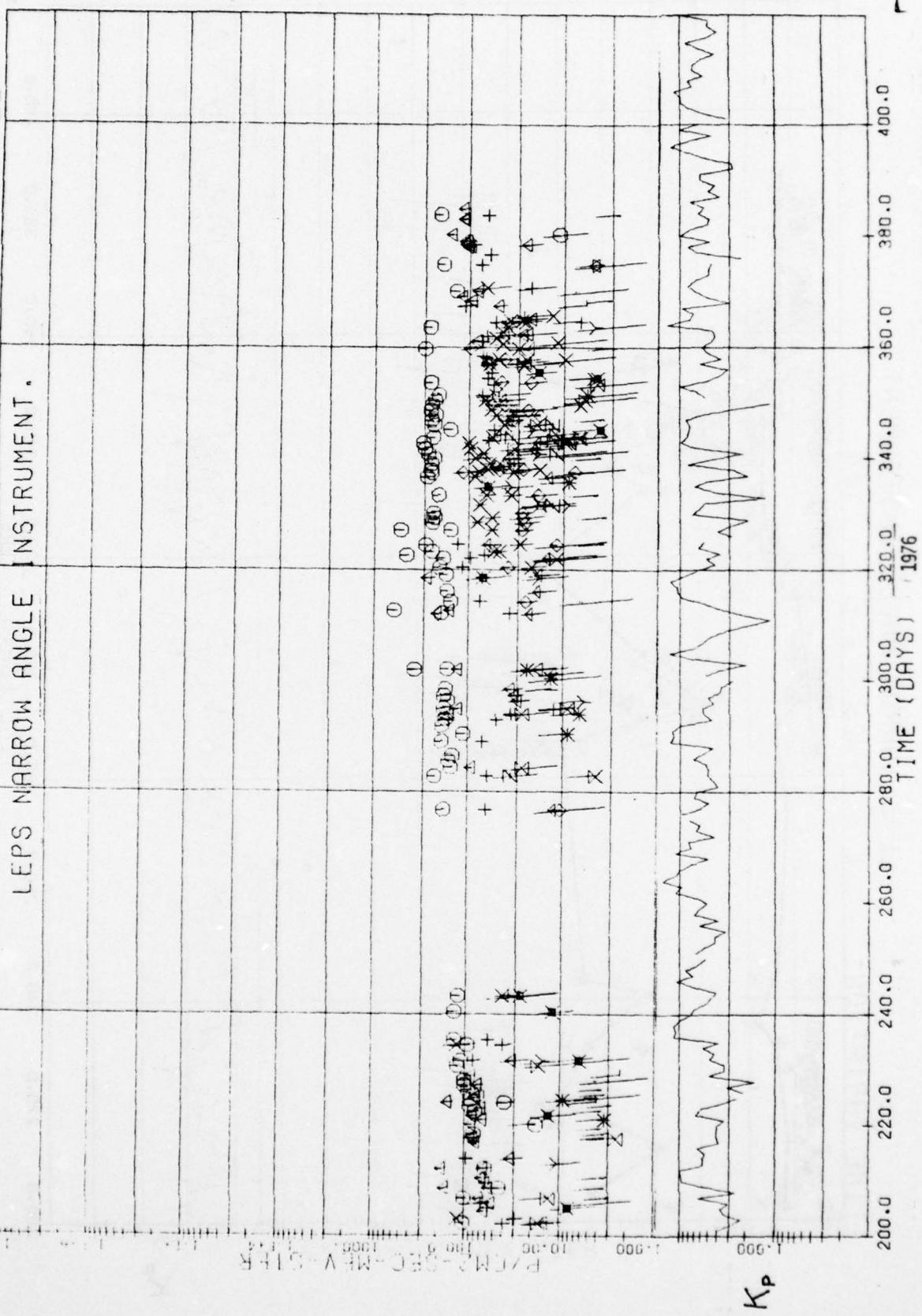
53-3 DATA SAMPLE.

LEPS NARROW ANGLE INSTRUMENT.

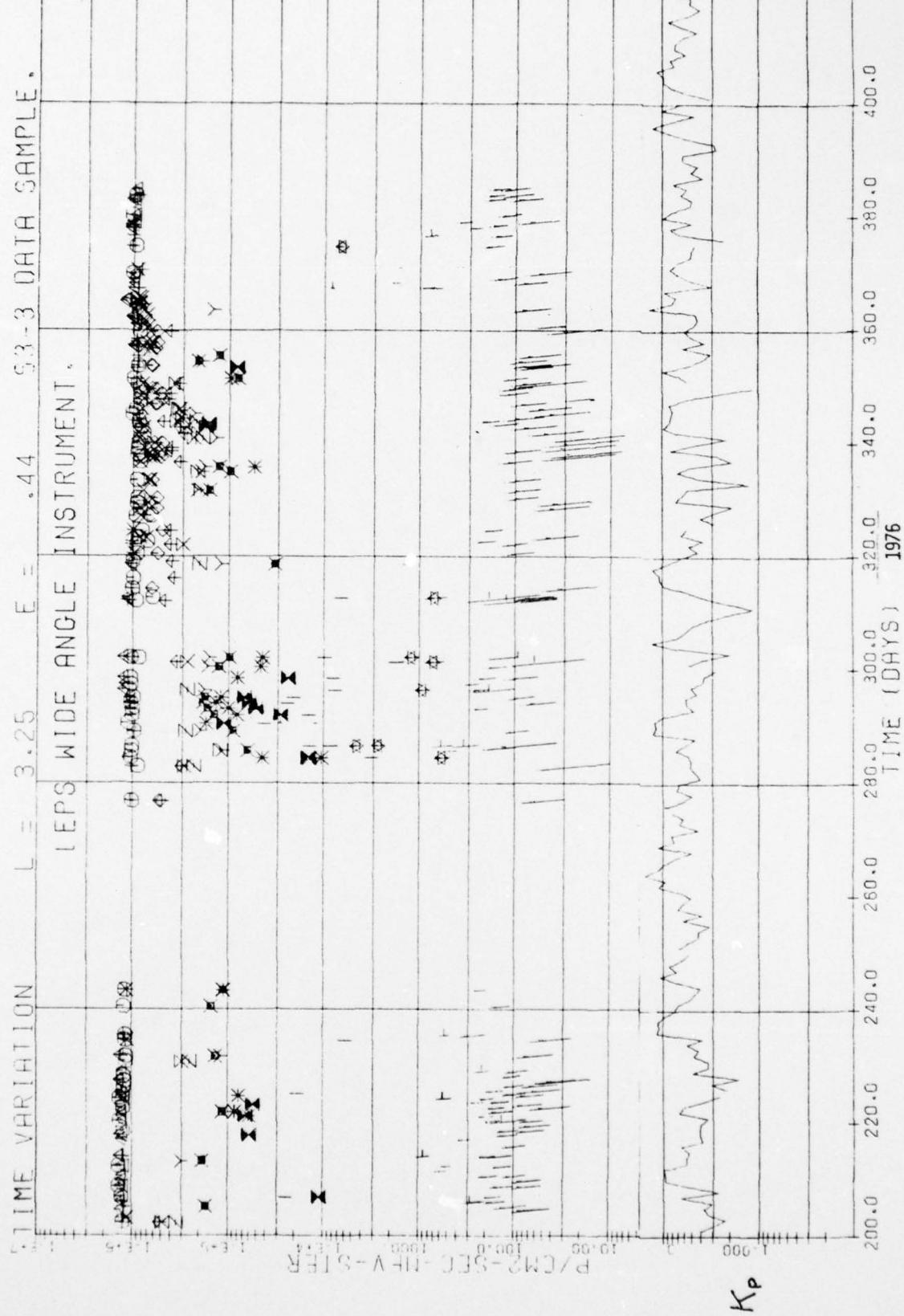


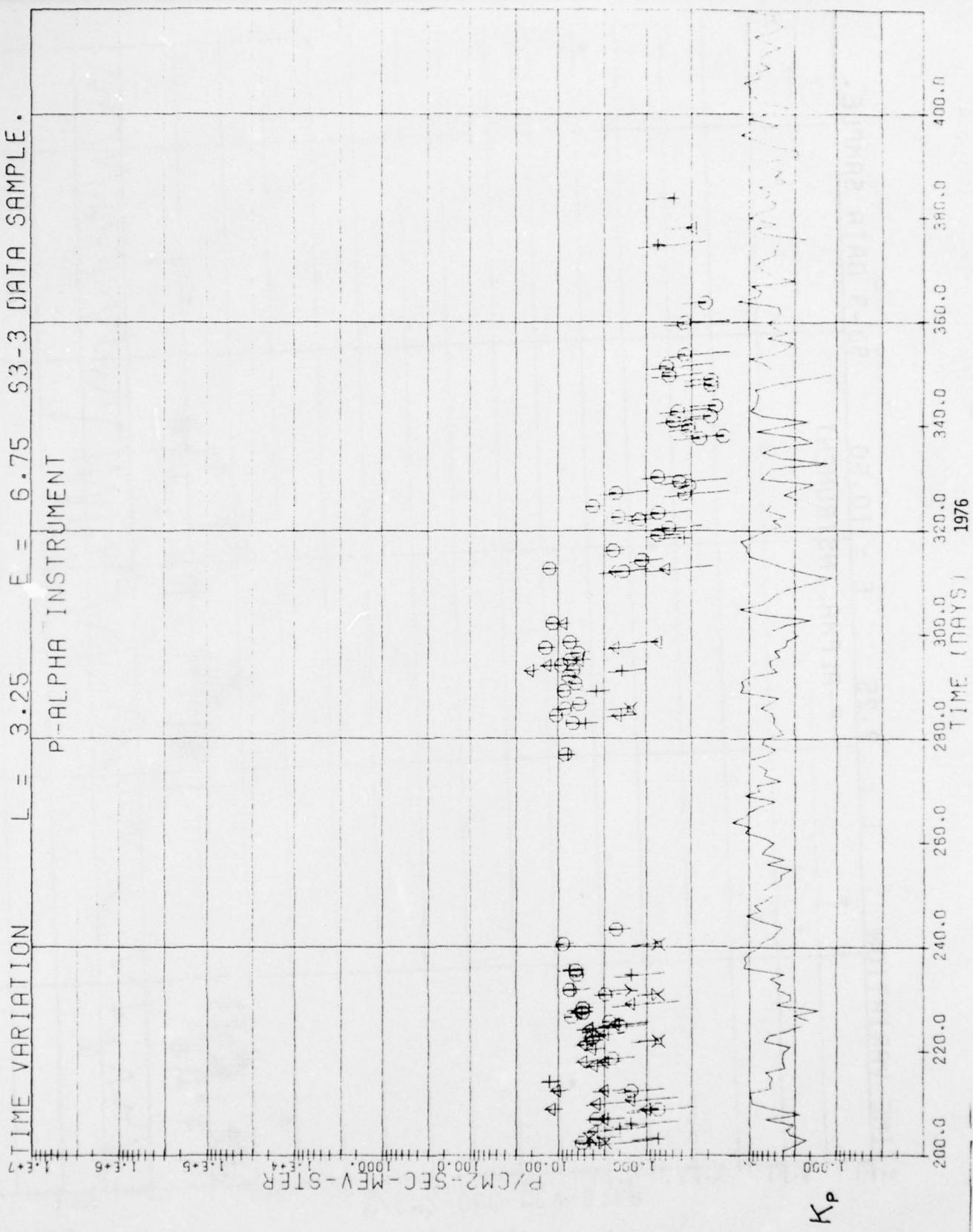
TIME VARIATION $L = 3.25$ $E = 4.65$ S3-3 DATA SAMPLE.

LEPS NARROW ANGLE INSTRUMENT.



K_p





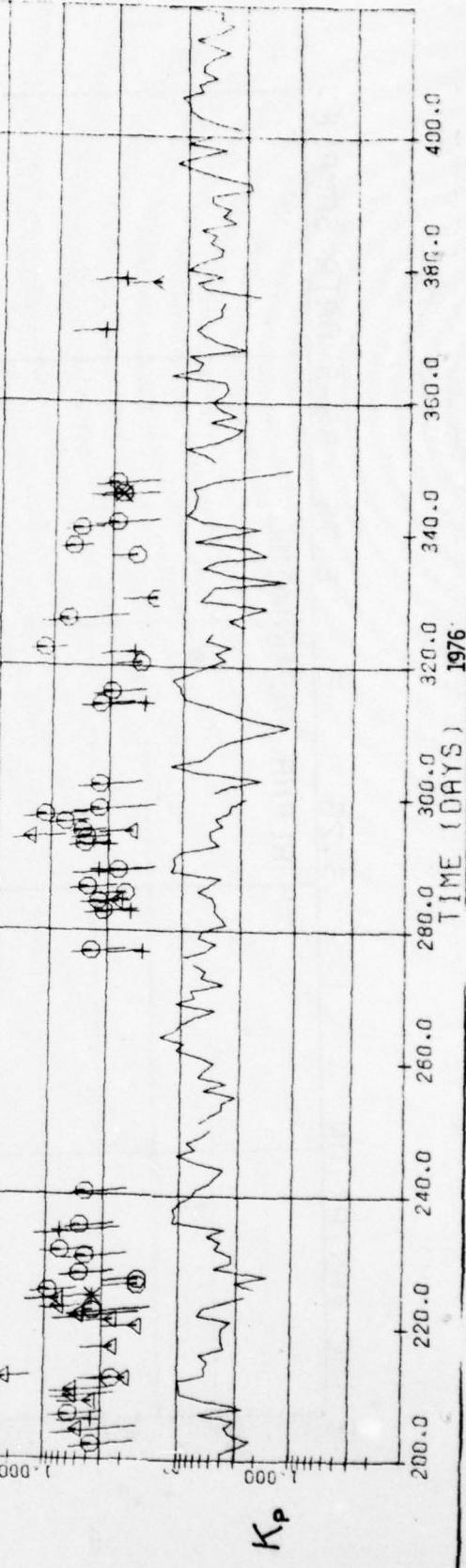
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TIME VARIATION $L = 3.25$ $E = 10.50$ S3-3 DATA SAMPLE.

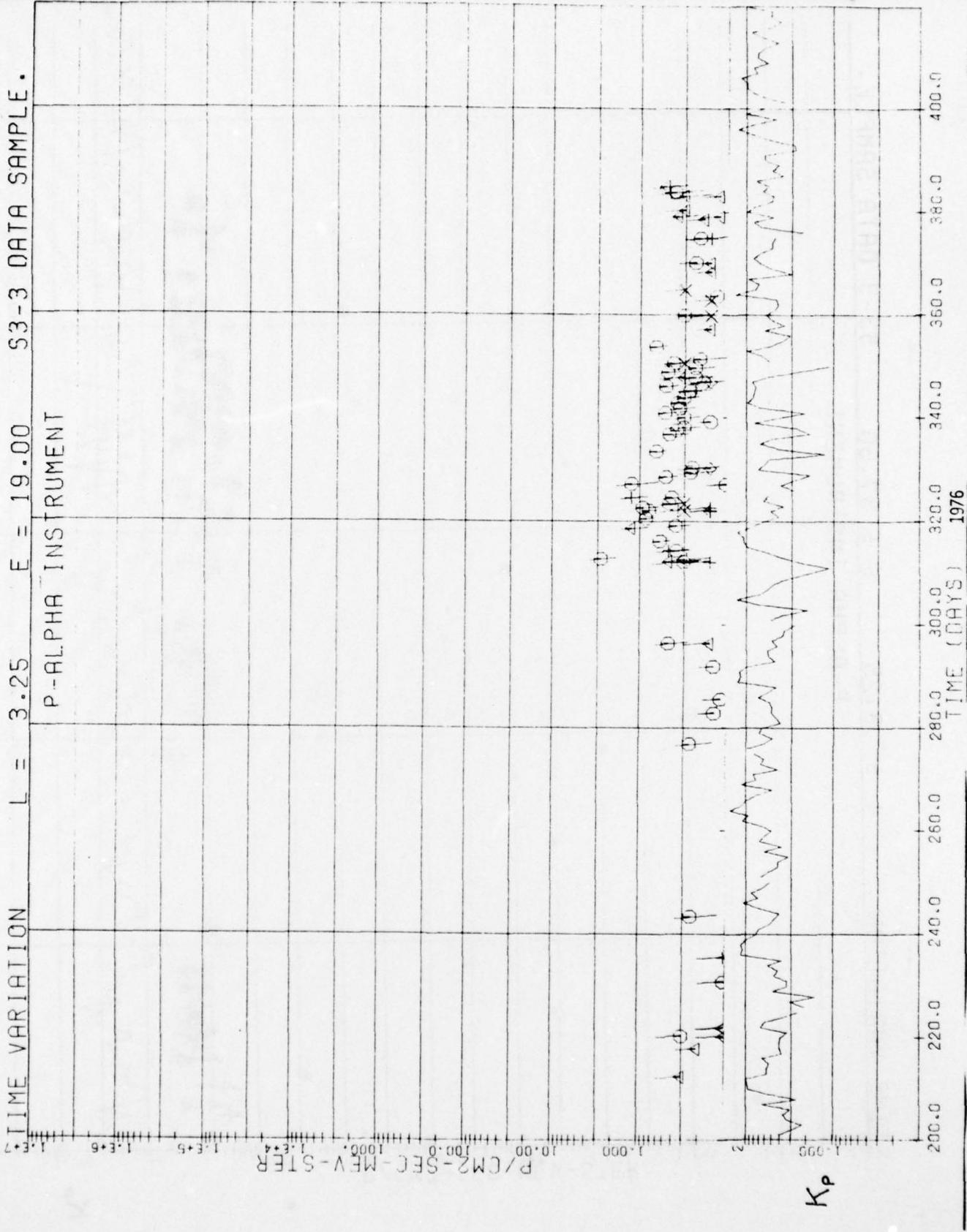
P-ALPHA INSTRUMENT

$P/\text{CM}^2\text{-SEC-MEV-STER}$



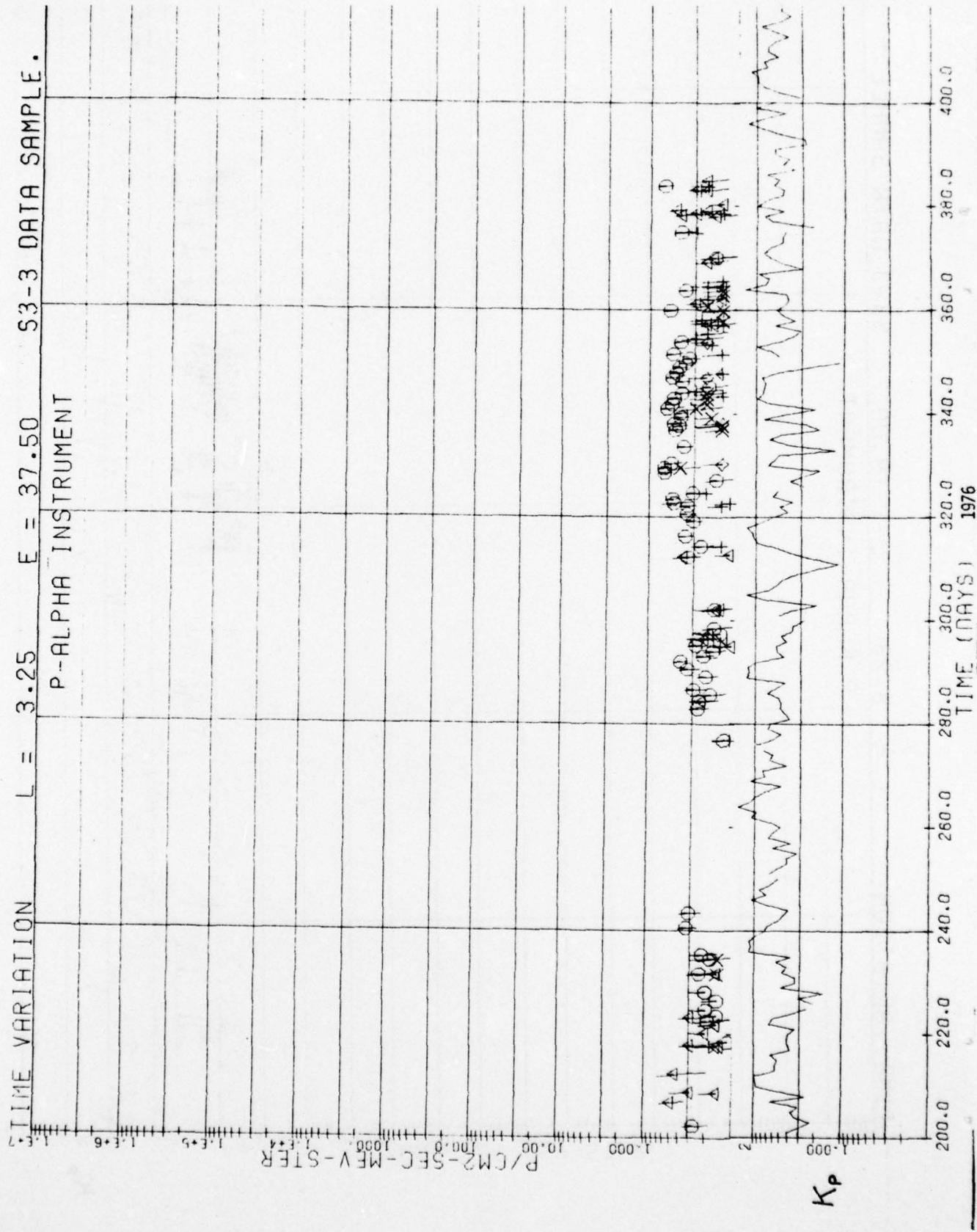
TIME VARIATION $L = 3.25$ $E = 19.00$ S3-3 DATA SAMPLE.

P-ALPHA INSTRUMENT



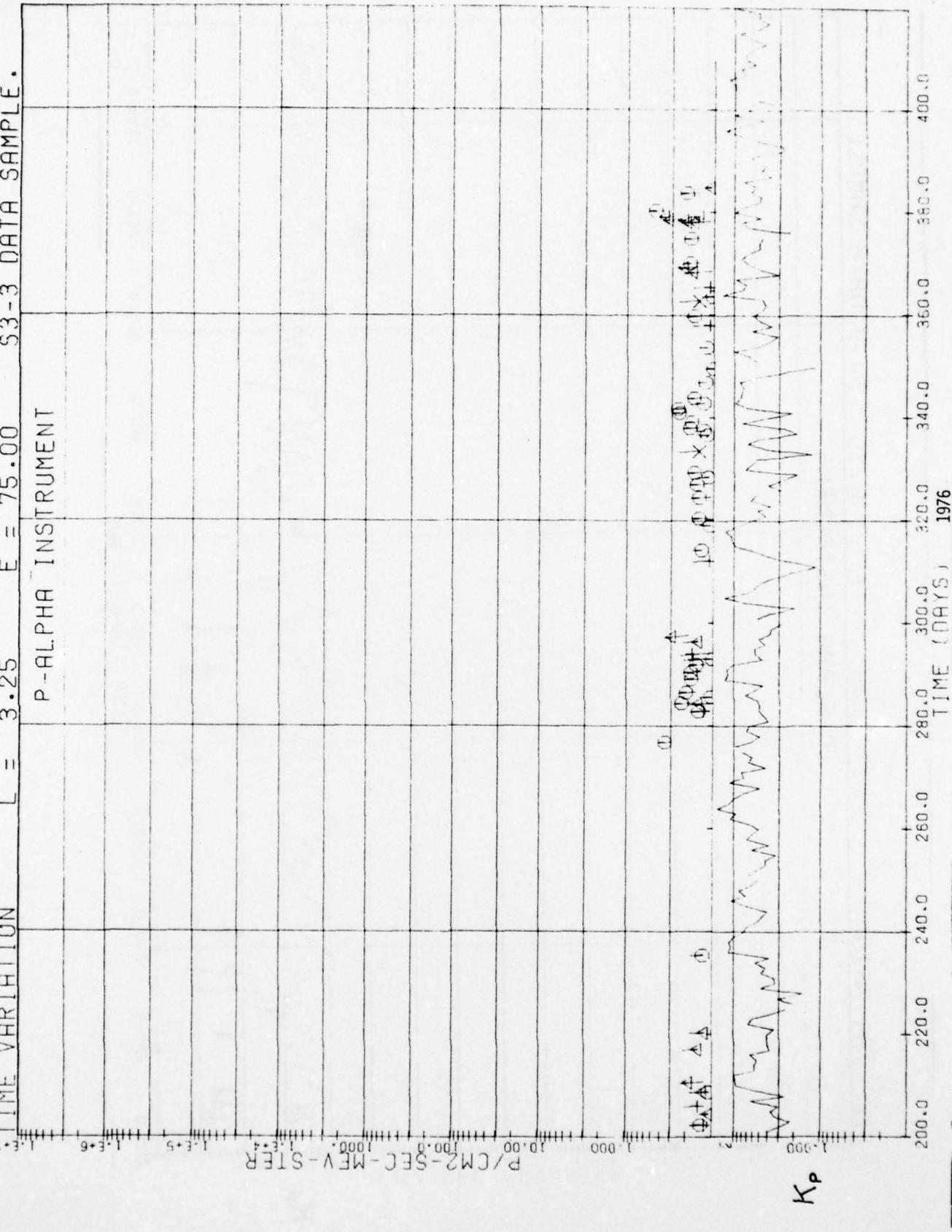
TIME VARIATION L = 3.25 E = 37.50 S3-3 DATA SAMPLE.

P-ALPHA INSTRUMENT

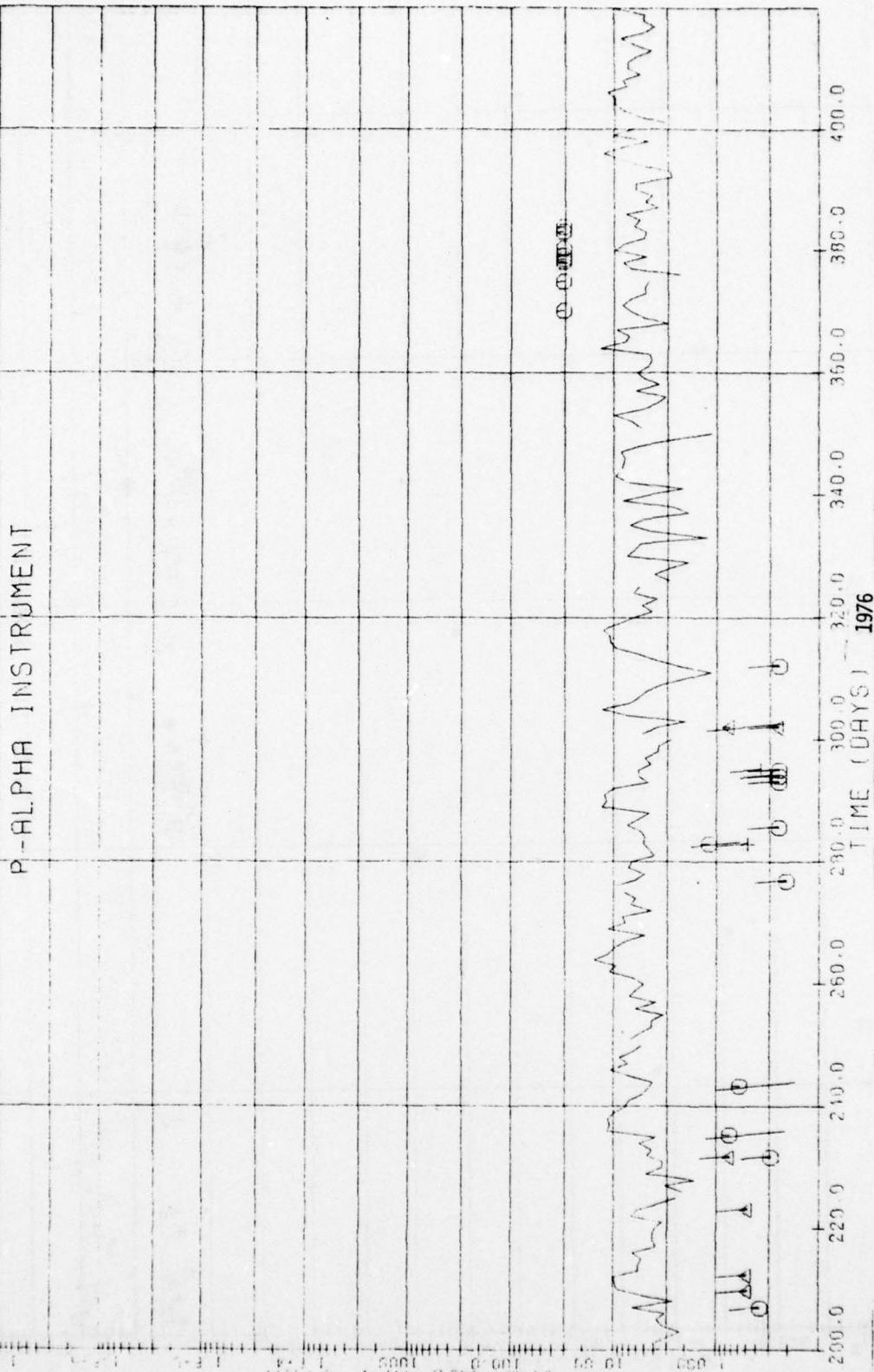


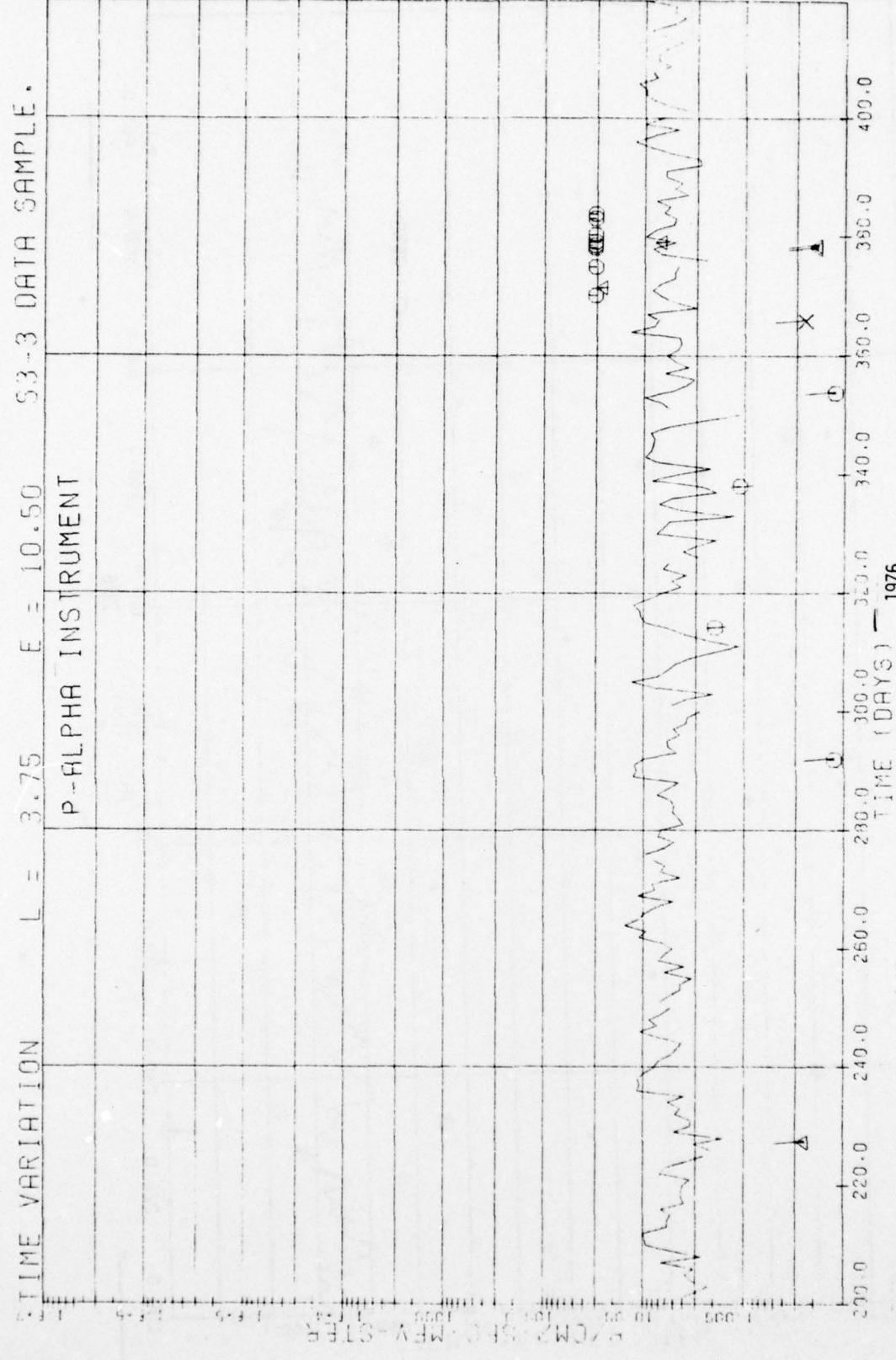
TIME VARIATION L = 3.25 E = 75.00 S3-3 DATA SAMPLE.

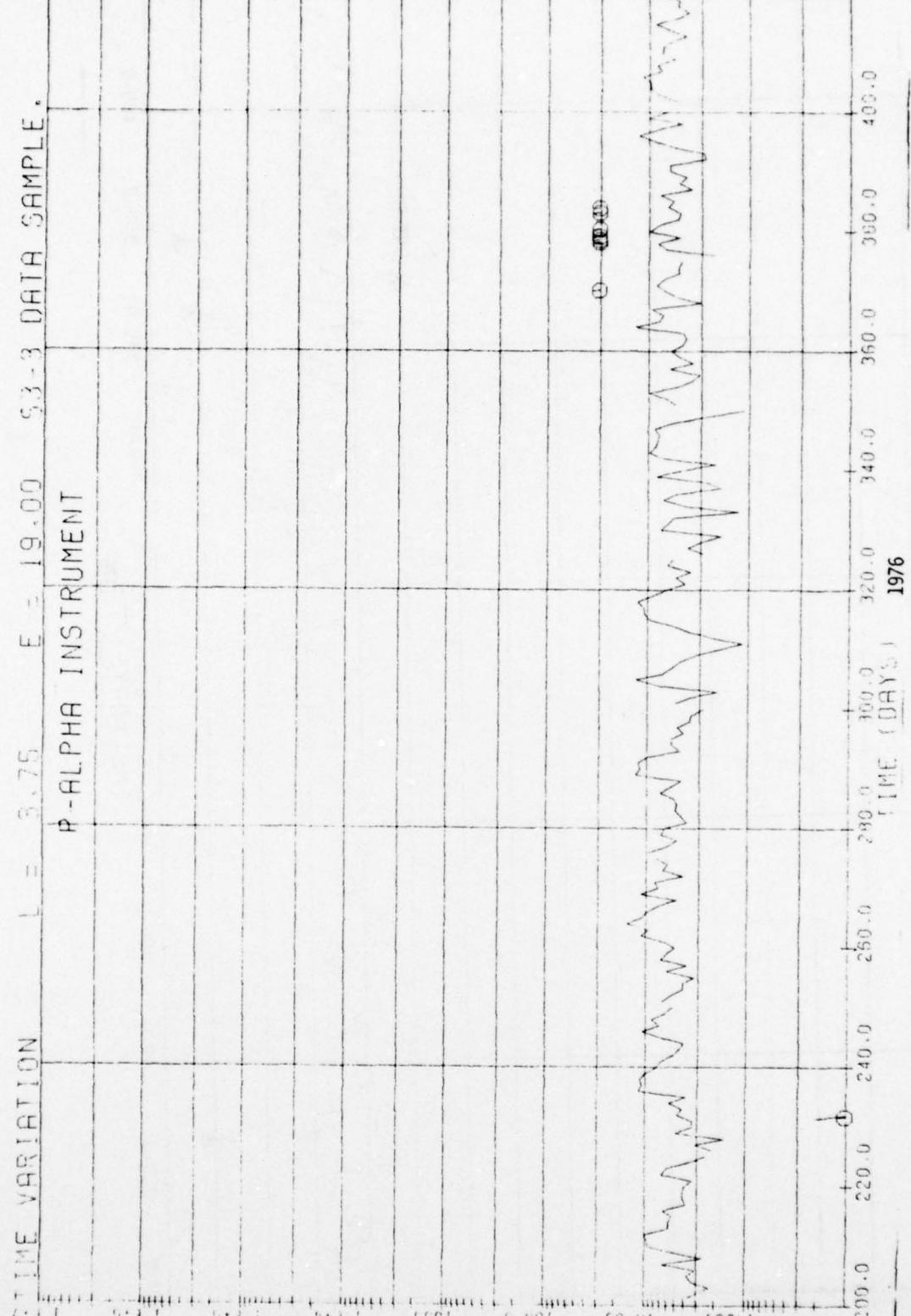
P-ALPHA INSTRUMENT



TIME VARIATION $L = 3.75$ $E = 6.75$ $S3-3$ DATA SAMPLE.







TIME VARIATION I = 3.75 F = 37.50 93-3 DATA SAMPLE.

P-ALPHA INSTRUMENT

